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VICTOR VERDIER.

An old and well known rose ; has fine lustrous foliage and an abundance of bloom.

THE

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VICTOR VERDIER ROSE.

OF the Hybrid Remontant Roses, perhaps none excel the Victor Verdier for its flowering habits. It is probably on this account that this rose has been so much used as parent stock from which to originate varieties, no other being more used for this purpose, unless it be the Jules Margottin and the well-known favorite, General Jacqueminot. It lacks however, one very important characteristic of a good rose, namely, fragrance; besides this, the plant is not as hardy as the other hybrid remontants, and it is only a moderate grower.

The Victor Verdier was originated in Lyons, France, by the celebrated rosarian, Lacharme, who introduced it to the public in 1852. The same person has also the honor of originating the well-known favorites, Alfred Colomb, Charles Lefebvre, Coquette des Blanches, Anna de Diesbach, and others, all fine roses.

The subject of our sketch was probably originated from one of the La Reine type, crossed with the Bourbon type. Among its descendants, which are classed together as belonging to the Victor Verdier type, are Pride of Waltham, Charles Verdier, and many others.

H. B. Ellwanger, describes this rose as follows: Bright rose with carmine centre, a very fresh shade, but not permanent; semi-globular in form, of good size; not fragrant; very free: wood is all but smooth: foliage lustrous.

Mr. T. H. Race, Seaforth, writes as follows concerning this rose: I have grown the Victor Verdier rose for several years. In color, form and fragrance

it is one of the loveliest roses of its class. But it hasn't constitution enough for general cultivation in our latitudes, though it is described as perfectly hardy in the catalogues. To get wood enough is my greatest trouble with it. Its foliage is a rich dark green and its new wood is very tender; with me it requires careful winter protection and is very liable to succumb to the hard spring frosts and sunny days after it has been uncovered. The seedling from it, known as the Climbing Victor Verdier, is a stronger grower and a hardier plant, though the bloom of the latter is not so lovely in its form as the parent rose. In brief, the Victor Verdier is too tender a rose for general cultivation further north than Maplehurst or Hamilton.

SMALL FRUITS ON NEW FARMS.

Most persons, who acquire land in the newly-settled portions of the West and South, delay taking steps to secure a supply of fruit till they are in a condition to set out apple, pear, peach and cherry trees. The cost of erecting buildings and fences and making other improvements is generally so great that they have no money to expend in fruit trees for several years When they have obtained them and set them out, they must wait other years before they have attained a size to produce fruit. Then quite likely they may find, to their sorrow, that the varieties they have obtained are not adapted to their locality. There are many reasons why persons who take up new land should commence with berry bushes and vines rather than with trees, if their object be the supplying of their own tables with fruit. Strawberry plants come into bearing the year after they are set out, while gooseberry, currant, raspberry and blackberry bushes will produce good crops in two years from the time they are planted, provided they receive suitable attention.

The cost of cuttings of grapes, currants, and gooseberries is very small, they can be sent through the mails at cheap rates, and they are easily rooted by cutting them in suitable lengths and setting them in a trench that can be made by simply forcing a spade into the soil. All except one or two of the upper buds should be covered with soil, which should be crowded close to them with the foot. In mid-summer it is best to give them a partial shade. This may be done by means of a fence board fastened to supports on the south or east side of the row. The board should stand about two inches fram the ground, and four inches from the cuttings. If the soil is rich, is kept free from weeds and grass and is covered with mulch, the rooted cuttings can be transplanted the following year. Cuttings obtained in the fall may be kept over the winter by placing then in the cellar or by burying them in the ground deep enough to protect them from the frost.—American Agriculturist

THE BRILLIANT GRAPE.

BY the kindness of Mr T. V. Munson, we are able to give our readers a representation of one of the most promising of his many new hybrid grapes, the Brilliant. This cut is from a life-size photograph. Mr. Munson describes it as follows: "This is a seedling of Lindley crossed by Delaware; produced by me in 1883. This vine is healthy, vigorous and hardy, having endured the winters of New York and Ohio with impunity. It ripens just before the Delaware, is very prolific, berries and clusters as large as Concord, compact, translucent red, similar to Delaware; quality about the same as Delaware, with less pulp, seeds one to three, skin thin and tough, berries adhere firmly to peduncle, making it a splendid early market grape, suitable for long shipments, and it will command the highest price It makes a fine white or amber wine. It has been tested in Florida, Georgia, New Jersey, New York, Ohio, Kentucky, Missouri, Texas, Colorado and Connecticut. It mildews some in wet seasons in New Jersey and Michigan, near large bodies of water."

Mr. Munson, in sending the engraving at our request, says farther: "The Brilliant ought to be a great grape in Canada. It is larger in bunch and berry by double than Moyer, better in quality, more than twice as heavy a bearer. The vine is much stronger, and seemingly just as hardy. It is perhaps a few days later, and clings to the cluster much better. The flowers are perfect, while in Moyer they are practically pistillate, and must have erect stamened varieties flowering at the same time, standing near them to give a fair crop.

Market Gardening.—This is a laborious occupation, yet one that pays a very handsome percentage on the investment. Ten acres in vegetables, well cultivated and properly managed, will prove more profitable than a fifty-acre farm producing the ordinary farm crops. We have frequently observed a vast difference in the accumulation of means between the ordinary farmer and the gardener. The one will commence under very favorable prospects, on a farm leased for a series of years, will labor industriously and study economy, and rarely realize more than a comfortable living for his family. The other, commencing under less favorable circumstances, with equal energy, does not only pay an annual rent of from thirty to sixty dollars per acre, and support a large family, but in a very few years realizes sufficient to purchase the place. A few heads of cabbage will, in frequent seasons, sell for as much as a bushel of corn, and a few bunches of early asparagus for as much as a bushel of wheat. Good vegetables will always sell at a good profit, and our hungry cities can rarely be overstocked with them.—Prairie Farmer.

Fig. 709.

Brilliant Grape.

CO-OPERATIVE APPLE-GROWING.

I ADVOCATE the extension to apple growing of the principle of co-operation, which has already been found of so great advantage in other branches, and more especially, so far as farmers are concerned, in the matter of cheese making. This co operation may be on a small or a large scale. It may be only the friendly union of two or three farmers in a neighborhood, or it may include a township or a whole county, and it may apply to those who have only small orchards as well as, or perhaps even better than, to those who have large ones, for the latter are generally better able to take care of themselves.

1. Co-operation may well begin with the gaining of knowledge on the subject. The two or three may make it a point to compare notes or exchange ideas and information, and the larger body may hold meetings and secure the presence of those who are able to impart instruction, with regard to the kinds of apples to grow, the best modes of growing them, and the best modes of disposing of them.

2. As a second step, co-operation in buying trees for planting will secure the advantage, not only of lower prices by ordering in larger quantities, but also of greater attention to the order, the prevention of the petty frauds of the "tree-peddler," and greater satisfaction in every way. If I want 50 trees and two of my neighbors want 25 each, each of us will gain by sending in an order for 100 trees at the lower rates that are offered for that quantity. This is an obvious and immediate advantage affecting the pocket, and is one that is within the reach of a small number who may choose to unite, as well as of a larger number.

3. When the orchard is in bearing there may with advantage be co-operation in such a matter as spraying, where the size of the individual orchard does not seem to warrant the providing by each one of a proper spraying pump. Two or three farmers in a neighborhood may purchase a pump and provide the materials between them, or a larger number may arrange with a man who owns an outfit to make a round of their neighborhood at the proper time. Many a farmer neglects to spray his orchard, because he thinks it hardly worth while to get a pump for himself, or because at a busy time he does not want to be bothered with something that he knows very little about.

4. When the apples come to be picked and marketed, there is not only a fresh advantage to be gained from co-operation in marketing them, but there is a summing up of all the advantages already gained, the test and realization of the work of the earlier years. The knowledge and information gained, the prudent selection of varieties suitable for the market, the care in training the trees from the first year upward, the spraying, the tilling and manuring of the ground, are all telling upon the crop produced. If the kinds of apples have

been carefully and judiciously selected to begin with, the co-operating neighborhood will become known for certain good varieties of shipping apples. If the trees and the ground have been properly cared for and the trees have been properly sprayed, it will also become known for the quality of the fruit produced. Buyers will be attracted to such a neighborhood, and if an immediate sale be made to them, better prices will be obtained on account of the uniformity and quality of the fruit, and that without any combination to keep up prices. Or, if a shipment to the English or other market be determined upon, the advantage of co-operation becomes even more apparent. The man who has only an acre or two of orchard has not a sufficient quantity to ship by himself. By uniting their forces, two or three or a larger number, may make up a carload or a larger quantity, and thus secure the advantage of the greatly reduced rates applicable to the larger shipment. Having a larger quantity, too, there is an advantage in dealing with the commission agent and the better knowledge of the market.

5. For windfalls and fallen fruit, co operation may secure a joint evaporator. This is a matter of great importance, not only to provide a proper means of disposing of this class of fruit, but also to avoid the unwise course of glutting the market with poor and decaying apples, which disappoint both seller and buyer. This evaporator may be either on a large scale in a town or village, or may be a smaller one for a smaller neighborhood.

To sum up, I recommend the formation of county societies to bring together all those who are interested in the subject at stated intervals, and to hold meetings for discussion and gathering information, and to work together as far as possible in the direction indicated. In addition to this, the apple growers in a locality, even if they be only few in number, ought to be in touch the one with the other and assist one another in such matters as spraying and the like, wherever necessary. My ideal would be to see 10, 20, or 50 farmers in a neighborhood meet together and form a "co-operative society," each one agreeing to plant, within the next five years, ten acres of orchard, the varieties to be few in number and all suited for shipment; to properly study and carry out the care of their trees, and when the time should come for fruit-bearing, to unite in sending their apples forward under their own brand to the English market, having their evaporator for the windfalls, and, if necessary, their central frost and heat-proof storehouse at the central shipping point.

Peterboro', Ont. E B. EDWARDS.

Planting Cherry Trees.—Prof. Budd, of the Iowa Experiment Station, says that a cherry or plum orchard does best when planted thickly in rows running north and south, and giving a wider space between the rows to admit the sun and allow free circulation of air. Orchards where the rows were 24 feet apart, and the trees 10 feet apart in the rows, have done better than those planted in the usual way.

SUBSTANCES WHICH GIVE MANURE ITS VALUE.

MANURE, without doubt, was the first fertilizer employed in a general and systematic manner by the tillers of the soil. Its use dates back to the beginning of regularly organized cultivation of the soil. The constant and rational use of this fertilizer is evidence of the effectiveness which is universally conceded to it and of the beneficial influence which it exercises on the physical and chemical properties of the majority of soils. Manure is, in fact, what might be termed a perfect fertilizer—it is at the same time organic and mineral; it contains nitrogen, phosphates, potash, and lime: its organic matter decomposes readily; its physical character promotes aeration of the soil, rendering it more porous, and facilitating the respiration of the roots and the nitrification of the nitrogenous materials which nourish plants; finally, manure is a fertilizer which repairs the losses of humus substances from the soil. It has long been maintained that these substances are unavailable to plants in their original state, and that time must be allowed for their decomposition and transformation into soluble products, but experiments conducted by Petermann at the Agronomic Institute of Gembloux, Belgium, have shown that these substances just as they exist in the soil are capable of being dialyzed through membranes and are therefore assimilable by plants, at least by certain species of plants.

In extended studies of the composition of straw the author discovered a very carbonaceous substance which Dehérain has named decomposable vasculose. This substance appears in the manure in large proportions, and, as is explained further on, one benefit derived from the application of manure to the soil is the restoration of this carbonaceous principle which is exhausted by growing certain plants. It is therefore desirable to so conduct the preparation of the manure that those fermentations are promoted, which will give, even at the loss of a small amount of nitrogen, a fertilizer containing in a free state a large quantity of black substance (*matière noire*). It should be mentioned, however, that many agriculturists do not adopt this idea and look upon manure principally as a means of returning to the soil the nitrogenous and mineral matters removed by crops. These authorities are, therefore, especially concerned to prevent the loss of these substances by various means which arrest or prevent unusual fermentation of the manure and as a consequence the formation of black substance.

In the following table we calculate from these figures the quantities of fertilizing materials contained in the solid and liquid excreta discharged per head yearly by the principal kinds of farm animals:

Fertilizing Constituents in the Feces Discharged per Head Yearly by Different Kinds of Animals.

	Nitrogen.	Phosphoric Acid.	Potash.
	Kg.	Kg.	Kg.
Horses	56.80	21.70	19.60
Cows	77.40	11.80	48.80
Sheep	3.81	2 54	6.50
Pigs	5.40	4.08	.....

Animal excrement, therefore, furnishes to the manure a large quantity of useful elements and contributes much to to its value, but it is not restricted to this *rôle*. The urine retained by the litter supplies the moisture and alkalinity indispensable to fermentation, while in the solid excrement are added, as we shall see below, the organisms necessary to the partial destruction and fermentation of the litter.

Below is given the percentage composition of wheat straw and oat straw determined by the method of analysis referred to above :

Composition of Wheat Straw and Oat Straw.

	Wheat.	Oats.
	Per cent.	Per cent.
Water	10.40	8.05
Nitrogenous matter	2.42	3.57
Substances soluble in ether (fatty substances and chlorophyll)	1.18	2.98
Substances soluble in water, ashes deducted (reducing and non-reducing principles—gums, tannins)	3.37	5.70
Cellulose	33 60	27.15
Vasculose	24 00	14.20
Straw gum (calculated as xylose)	19.71	27.70
Ashes	6.34	9.85
	10 .02	99.20

Use of Manure.

As regards the use and efficiency of manure in the soil, we have to distinguish two cases, application to strong soils and application to light soils. Manure generally produces little result in strong soils. On such it is best to use it in the fresh and unrotted condition. In this condition it acts not only by the elements which it supplies, but also by rendering the soil more porous and lighter, and in facilitating aëration of the soil which results in an increased oxidation of the nitrogenous substances contained in the manure, and in their transformation into nitrates so useful to plants. Sometimes the results obtained

in culture without manure on strong soils are quite remunerative. A celebrated example is the experiment of Lawes and Gilbert, at Rothamsted in which wheat has been grown without manure with good returns during thirty-two consecutive years. In similar experiments with barley carried on for twenty consecutive years (1852-1871), on the same soil, the yield was not sensibly reduced. Recently Pagnoul, at the Agronomic Station of Arras, has made a similar observation with sugar beets, which he has cultivated on strong soil for ten consecutive years without manure.

In light soils, on the other hand, manure is able to produce its full effect. The highest efficiency of this fertilizer depends upon a number of factors, fertility of the soil, kind of plants cultivated, etc. The results obtained on different soils will therefore vary widely. Dehérain, in field experiments at Grignon, on moderately light soil, obtained good yields of oats and potatoes during five consecutive years without manure. A. Girard, on the contrary, considerably increased the yield of a special variety of potatoes (Richter Imperator) by heavy manuring. For certain plants, such as corn grown for fodder, and sugar beets, all agriculturists agree as to the good effect produced by manure. These plants, in fact, readily avail themselves of the organic matter with which manure is charged.

It has been pointed out above that manure acts in the soil through the mineral and organic materials which it supplies, and through the physical changes which it brings about in the soil. The latter allow the nitrifying ferments to exercise their function under favorable circumstances, and to gradually transform the nitrogenous matter of the soil and of the fertilizers into nitrites. Nitrates are especially needed about plants, and are very easily assimilated. Aside from the solubility of the black substance, of which we have already spoken, this nitrification is the principal cause of the efficiency of manure; and since this phenomenon goes on in a much more complete and rapid manner in light soils than in strong, it follows that the latter will profit less by applications of manure.—A. HEBERT, Expert Station, Grignon, France.

Pruning in Winter.—Hardy varieties of the apple may be moderately pruned in winter, but there should be very few large wounds. These wounds should be covered with a composition that will entirely exclude rain, which may be applied after the outside of the wounds have become entirely dry, and it is especially important that the weather be excluded before the advent of another summer. After trying several substances, we find white-lead paint as good as any and more readily procured in almost any painter's shop, or in small cans at hardware stores. Applying grafting wax, formerly recommended, is more difficult. Pine tar, with brick dust intermixed, is also good. Caution is needed and it is better to prune too little than too much.

PEACHES: THINNING AND PACKING.

THE peach industry is an important one in many parts of our Province, especially when the yellows does not exist. Peach growers will be interested in reading Bulletin 74 of the Cornell Experiment Station We quote here that portion referring to thinning and packing, two important features, the one for producing fine large samples, and the other for placing them before buyers in the most attractive manner.

Thinning the fruit.—There is almost universal neglect in thinning the fruit in this State. Every peach grower knows that good fruit cannot be grown upon overloaded trees, and yet he refuses to thin and forthwith blames the market! It should be a rule that no two peaches should stand closer together than five inches of one another. No work of the orchard pays better than this thinning of the fruit, either in the price which the remaining produce brings in the market, or in the vital energy which is saved to the tree. Peach trees which are regularly thinned should bear every year, barring injuries from winter or spring frosts. Growers seem to forget that this fruit must all be picked sooner or later, and that the work is more easily done in June or July than in September. The thinning should be delayed until the fruit is the size of the end of one's thumb, for by this time the "June drop" has occurred, and the peaches can be readily seen and handled.

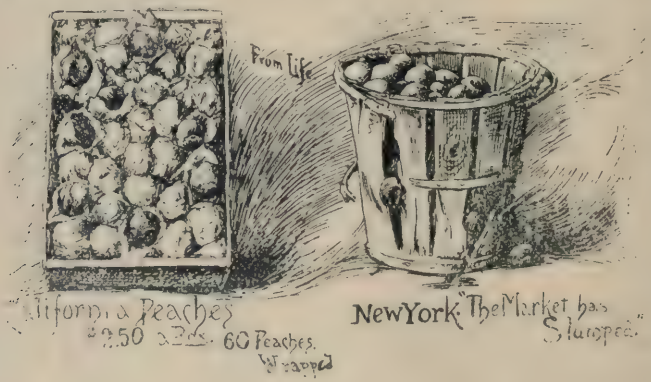


FIG. 710.

Marketing the fruit.—But if growers are negligent in thinning the fruit, they are too often positively careless in marketing it. Even in this year of low prices, fancily or nicely packed fruit has brought good prices, wholly independent of its quality. The handsome boxes of California peaches, containing 60 wrapped fruits, have sold from $2.00 to $4.00, and yet they are generally very inferior in quality when they reach our markets. Alongside these peaches,

shipped several thousand miles, our peaches have sold for 25 cents to 75 cents a half bushel.

There are several faults with our method of handling peaches. The packages are too large. The fruit is not graded and selected, in fact, it is not well grown. There are often no wooden covers on the baskets, and, as a consequence, that part of the package which should look the best, is, usually, most jammed and crushed. In observing the markets this summer, I found that quite half the packages were not full when they reached the salesman, and the peaches comprising the two or three top layers had chased each other around the basket until they were scarcely recognizable. The peaches had evidently been dumped into the basket, and they settled as soon as placed upon the cars. Our method of handling peaches is the very best advertisement of the handsome Pacific coast fruit. In that fruit, every individual peach in sound and perfect; in eastern fruit, the peaches often run through the package and are sold in the liquid state!

Wintering Vegetables.—Where did you get such delicious turnips at this time of year? Were they from the South? Now we will just let you into a little secret, providing you will promise to tell every one about it. Last Fall, when it was time to put away our vegetables for Winter, not having a cold cellar, we sank some barrels in the garden near the house, first taking out both heads; the rims were six inches above the level, and the earth raised up to the tops, in order to carry off the water. In these barrels we put our turnips, carrots, beets, parsnips, salsify, and last, though not least, our cauliflowers. The latter were put in a barrel about the first of December, the heads were just forming, and not more than two inches in diameter: these kept right on growing until the last was eaten, which was about the middle of February. The other vegetables at this writing, March 7, are as fresh as when put away. We filled the barrels but half way up, and did not put any soil with them, the roots lay on the moist earth, where they kept just above the freezing point by the warmth that came from below. The only covering they had was a butter tub that we put in the top of each: these fitted closely to the barrel, and kept the frost out perfectly. On but two nights was further protection given, then the mercury fell to nearly zero, and we threw a piece of old carpet over each barrel.—Amer. Gardening.

To Keep Apples late into spring or early summer, pack them in oats that are free from moisture, not allowing any apple to touch another. This is an excellent plan to keep a family supply for use until new apples come. If wrapped in paper the apples will keep all the better. The oats are equally as good for use after the apples are taken out as at first. For the longest keeping apples, select those grown on high clay land: lowland apples will not keep so well, although they usually sell better in market.

NOTES ON APPLE ORCHARD CULTIVATION.

AY I take the liberty of asking you to insert in your very interesting monthly a few notes relative to the cultivation of an apple orchard. I have been more or less interested in apple trees for quite a number of years. Four years ago I decided to take a more active part, and, turning my attention to this branch of culture, became an apprentice-horticulturist. I have set about 500 trees, consisting principally of the leading varieties known in this section of the country, such as Duchess, Wealthy, Fameuse, St. Lawrence, Canada Baldwin, Golden Russet, etc., which are all doing well.

Like everyone imbued with the desire to make a success of a new enterprise, I began to study the art of making apple trees grow, and, what is still better, bear fruit, adopting the practice to which others attributed their success. In every line of business there are always things which crop out, of which one does not think at first; this has been my experience, anyway, as far as horticulture is concerned.

It is now established, and on very sound principles, that a young orchard should be kept under cultivation, and that consequently the raising of vegetables and roots should be what the young orchardist should put his hands to. But when one is located quite a few miles from a marketing place for garden products and has hardly any stock to feed, the culture of roots, such as carrots, beets and turnips, is not by any means a paying business.

One must then have recourse to the culture of potatoes and corn, which pays very well when properly done, but the work involved by the culture of from seven to eight acres of potatoes and corn is indeed considerable, and impracticable in a good many cases on account of the scarcity of hands, or great cost of fertilizers needed. This is the obstacle which presented itself to me, and I thought of sowing about four acres or so of my orchard in cereals. I consulted many works on horticulture in order to ascertain what would be the best grains to try, but, unfortunately, I could not get any information on the subject. Accordingly, having to decide for myself, I chose peas and oats, sown together as a mixture, for the simple reasons that peas greatly improve the soil, and oats need much less nutritive elements than wheat or barley.

This first trial I made two years ago. The crop was a very good one, but as soon as the field was rid of the grain I noticed that the bark of some of the trees had been slightly gnawed by something, but what this something was, was the next question to be solved. The damage done to the trees was so small that a very superficial examination led me to believe that perhaps crickets had tried to feast on what I prized so much. Last year, however, I tried peas and oats a second time, but in another part of the orchard. The first part of the

season having been very wet, the peas grew very thick and tall. but they soon had to give place to the oats when the dry weather set in.

The result was more pea straw than bushels of peas. But in falling thus to the ground, the pea stalks formed a grand playground and an excellent feasting field for the mice and the moles, and, to my satisfaction as well as to my loss, I found out that the accused crickets had been transformed into these devastating little animals. Nine of my most healthy trees had the barks badly eaten up and the marks of the teeth were plainly visible. I then applied to them all the best remedy known to me in such a case, viz., a coating of fresh cow dung on the bark of the trunks. Four of them will, however, very probably die.

I am now a firmer believer than ever in evolution, and to those who may feel unable to keep all their young orchard under cultivation with vegetables, roots and corn, I would advise to sow other cereals than peas and oats.

Ottawa. N. J. GIROUX.

Improved Brace for Wire Fences.—One trouble with wire fences is the liability of the wires to become loose, sagging down or losing their tension. This is mainly caused by the posts tipping or leaning towards the point of the greatest strain, and which is not fully overcome by the common plan of of placing a brace against the tod end of the post, the other end being imbedded in the ground. This lower end is subject to the action of frost, decay, and the liability of the stone or other substance against which it rests, to become displaced. By the plan shown herewith this trouble is obviated, and a firm anchorage secured. The two end posts are connected at the top by a strip or pole *a*, two two by three-inch strips *m m* are nailed in the form of an X to the top and bottom of the posts ; they are also firmly connected together at the centre by bolts or spikes. This plan answers equally well for ends of fences or the centre of a long line. In the latter case it equalizes the strain from both directions.—American Agriculturist.

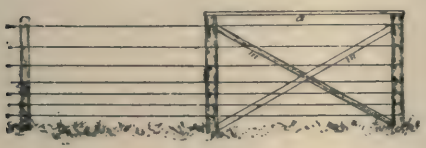


FIG. 711.

Feeding Apple Pomace.—I have always fed apple pomace from my cider mill to my cows, giving them from a peck to a half bushel each daily They are very fond of it, and it materially increases the flow of milk. I believe it is an excellent food for them, taking care, of course, to use it perfectly sweet, before fermentation begins. I feed it to swine, oxen and young cattle at any time. All these animals seem very fond of it, and will come to the gate every morning to get their ration. I have never seen anything but good results from its use.—M. A. SMITH, in American Agriculturist.

IRRIGATION.

HE past dry season certainly leads us to the conclusion that Canadian fruit growers sadly need irrigation of some kind to guard against such failures as have resulted this season in many localities from drouth. Prof. Taft writes a rather interesting article in American Gardening upon the subject, throwing out possible ways of accomplishing the work. The difficulty, however, is that most of them would be too great expense for an ordinary fruit grower, who has already sufficient cost in labor and in baskets to cut down his profits to a very small amount. For instance, he recommends draining water in tanks, where no better means are at hand. We have tried this enough to feel discouraged with the results, unless for a small garden. His plan of distribution with hydrants might work, if water supply is convenient, This would consist in running the water in pipes that will stand a slight pressure, such as iron or cement, to hydrants located at intervals of perhaps two hundred feet, and then with one hundred feet of fire-engine hose, which can often be purchased cheaply at second hand, direct the water into the furrows or basins that have been made to receive it around each tree. For vegetables and fruits where furrows are used the same means of conveying the water from the pipes may be employed, and thus one hydrant will answer instead of a dozen or more small ones.

In another part of his article he condemns the practice of simply wetting the surface about trees with water, thus :—The mistake is often made of applying the water upon the surface, and it is made worse by the practice of giving each tree a pailful or so at a time and repeating it daily. One or even two pails of water thrown on the ground under a tree will at best only wet the soil to the depth of an inch or so, and as this does not carry it down to the roots little or no good will result ; in fact it may lead to harm, as a crust will form, particularly upon a heavy soil, and not only will the water that has been applied quickly evaporate, but the loss of the water already in the soil will be hastened. If the application is frequently repeated it will result in making bad matters worse. Instead of applying five gallons every night for a week, had the same amount of water been applied at one time and the arrangements been such that it would soak in to the roots, the tree would have been amply supplied in all probability, and no further application would have been necessary for ten days or more.

Whenever possible we would recommend that pipes be laid in which the water can be conducted from the reservoir or tank to a convenient distributing point in the field. If only a small area is to be watered, say five acres, an iron two-inch pipe would answer, if a pressure of ten or fifteen pounds could be secured. With a larger area, or a light pressure, the supply pipe should be

enlarged, and then the galvanized sheet iron pipe with a lining of cement could be used. A four-inch pipe would suffice for twenty acres. For the market or truck garden some such arrangement would be almost a necessity as there the amount of water needed would be much larger than would be required for an orchard. In a dry season it would be desirable to apply at least one inch of water once in a week or ten days. This would require about 800 barrels of thirty-two gallons each. In most seasons two or three applications will be all that will be required, but in years when the drought is long continued as many as seven or eight may be necessary. When small orchards are remote from the water supply the interest on the cost of the piping might be more than the extra cost of hauling the water in tanks, especially as irrigation may not be necessary for our orchard crops for two years in succession.

A HINT FOR PLANTING AN ORCHARD.

Measure off, as to number of trees. See how many rows each way are required. Then plow in lands of the same width the rows are to stand apart, so that each dead furrow running north and south, will come in the proper place for a row of trees. When each land is plowed, set the plow to run as deep as possible, and go another round in each dead furrow; with a steady team and by taking pains, this last round will leave furrow straight. Then measure off crosswise, set 3 or 4 sight stakes and run a light furrow for each row east and west The ground can thus be prepared with one-tenth the usual labor.

Use best surface soil for filling in; work it carefully among the roots. Never let pure manure come in contact with roots—place on the surface. As soon as their has been soil enough put in to somewhat cover the roots, pull tree gently up and down, causing the earth to jolt into every little hole and cranny, then fill in earth, pounding it down tightly as you fill it in, not waiting until it is all in. The great secret is to guard against leaving air spaces around the roots or under the prongs, and to pound and press the soil as firmly as in setting a post, taking care not to bruise roots. When filled up level tread or pound the soil around and towards the tree as hard as possible; then put several inches of loose soil over the tramped surface to prevent baking, etc. If planted as directed, staking will never be required, and your tree will live and grow during the dryest season.—Nurseries and Orchards.

Provided all other elements of good culture are cared for, it is almost impossible to give fruit trees too much manure. Much of the trouble with fruit trees comes from their being half starved. Pear and apple trees require heavy applications of well-rotted manure, placed for yards wide around the trunk under the branches, though perhaps many think that such a dressing of manure would never pay. But we are speaking of the absolute health of the tree and productiveness in splendid fruit.—Hort. Times.

A SCALE FOR JUDGING FRUITS.

A Paper by the Secretary, before the Annual Meeting at Orillia, Dec., 1894.

ALREADY the Ontario Fruit Growers' Association has taken steps to secure greater uniformity and fairness in the judging of fruits at agricultural and horticultural exhibitions throughout Ontario. The fruit catalogue published annually in our Report, is referred to by intelligent judges for final appeal in disputes concerning the value of varieties, but, it is not, however, used as widely as it should be. Some judges make free use of it in judging their collections, while others pay no attention whatever to it and jump at hasty conclusions.

I think it most important that we should pursue this matter still further, until we are able to furnish every secretary of every agricultural and horticultural society with a score card for the use of their judges.

True, it requires a great deal more time to judge the fruit in this careful way, assigning to each variety its value on some systematic basis, than it does to merely jump at conclusions from the general appearance of the collections, but such careful work amply repays the time it occupies. As conducted at present, our fairs fail entirely in accomplishing the end for which they were intended. They do little or nothing in educating the public with regard to the real value of the varieties shown, or in directing planters concerning the most profitable or most useful kinds to plant for the various purposes. No doubt there are some judges who take into consideration more than merely the appearance of the collections, but, if they do base their decision on some sensible list of points, the public do not know what these are, and consequently are no wiser in this respect than they were before. Now if a score card with clearly defined points, showing every investigator the points taken into consideration in giving the decision, and showing the real value of each variety, as made up of the various points of merit which it possesses, the public would take great interest in reading these over and would soon become educated regarding the important points which guide the judges in estimating the value of varieties, and planters also who are about to plant orchards would be able to do this much more intelligently after having made a study of the exhibits at the various fairs.

I do not propose to give you a form for a score card that would be beyond criticism. I simply place before you two or three forms with the object of stirring up that careful discussion on this subject which it so well deserves, and hope that either in the open meeting, or by the aid of a committee, we will be able to procure such a score card as will secure the approval of this whole Asso-

ciation. These should then be printed in quantity and a sample of them sent out to the secretary of each agricultural and horticultural society in our Province.

I think it is important that not only the judges should use these, but also that the public should be fully acquainted with them, in order that the exhibits may be made with greater intelligence than they are at present.

Here is a sample of card proposed for judging single plates of apples:

Score Card for Plates of Apples and Pears.

	Value or Points.	Score.
Form	10	
Size	10	
Color	10	
Freedom from blemishes	20	
Uniformity	20	
Quality	30	
Perfection	100	

Then for judging collections of apples and pears, I presume quite a different form, perhaps this one, for a large general collection:

Score Card for Collection of Apples and Pears (General).

*Ten points as follows:—Form, 2; Size, 2; color, 2; freedom from blemishes, 2; uniformity, 2.

VARIETY.	*Value of Sample.	Catalogue Value of Variety.	Total Points.
Baldwin	5	22	27
To sum of total points add maximum of 10 for covering season.			

On this card, the list of the varieties may be entered, the value of the sample showed, and the absolute value of the variety as shown in our apple or pear catalogue as the case may be. The sum of these will be the number of points gained by the variety in the collection, and the sum of these will be the total value of the collection.

Thus, the value of the sample of Baldwin shown may be only five out of a total of ten possible points, the absolute value of the variety as shown in our report is twenty-two, and adding these together we have twenty-seven as the total value of this variety in the collection.

I have made ten the maximum in this case, rather than one hundred, for

the sake of simplicity. On a large collection it will be best to just keep in mind the relative value of the points, and to work out the value of each sample mentally on that basis.

For a collection of varieties for dessert purposes a somewhat different card should be used. Thus:

Score Card for Collection of Apples and Pears (Dessert).

*10 points as follows:—Form, 2; size, 1; color, 2; clearness, 3; uniformity 2.

VARIETY.	*Value of Sample.	Catalogue Value of Variety.	Total Points.
Baldwin	5	2	7
To sum total of points add maximum of ten for covering the season.			

And for cooking the following will be adopted:

Score Card for Collection of Apples and Pears (Cooking).

*10 points as follows:—Perfection of form, 1; size, 4; color, 1; uniformity, 2; freedom from blemishes, 2.

VARIETY.	*Value of sample.	Catalogue value of variety.	Tot Points.
Baldwin	5	5	10
Add maximum of 10 for covering season.			

In these two last forms, instead of taking the total value as given in our catalogue, the value there given for dessert or cooking should be used respectively. Thus the sample of Baldwin which, for lack of color, lack of uniformity and for blemishes, only has a value of five, gets two additional points only as a dessert apple; while for a cooking apple the Baldwin is worth five marks, making the value of this variety in the collection for cooking, ten.

For judging grapes, of course, quite a different set of points must be observed from those used in judging apples and pears. I would propose for single plates—

Score Card for Plates of Grapes.

	Value of Points.	Score.
Flavor	30	
Form of bunch	10	
Size of bunch	15	
Size of berry	15	
Color	10	
Firmness	5	
Bloom	5	
Freedom from blemishes	10	
Perfection	100	

Score Card for Collection of Grapes.

* 10 points as follows :—Flavor, 3 ; form of bunch. 1 ; size of bunch, 1½ ; size of berry, 1½ color, 1 ; firmness, ½ ; bloom, ½ ; freedom from blemishes, 1.

VARIETY.	Value of Sample.	Catalogue value of Variety.	Total Points.
Concord	8	21	29
Delaware	6	26	32
Lindley	5	28	33
Niagara	9	22	31
Pearl	8	4	12
			117
Add maximum of ten for covering season.			6
Value of the five.			123

As such a manner of judging fruits would entail a great deal more labor than the plan now adopted, I suggest that only one judge be appointed in each section, instead of three as at present, and that this one judge be an expert, and one who has the confidence of the exhibitors as well as of the authorities. Further, I recommend that this judge should be allowed the amount now paid to the three. In this way there would be sufficient compensation for the work done, and better work would therefore be secured. One judge would work almost as fast as three, and, if properly paid for his time, could afford to do the work well.

A committee was appointed by the meeting at Orillia, to consider this subject, and report. The committee recommended the adoption of the Score Cards, with the amendment that in awarding the points for covering the season, in collections, the maximum be computed on a basis of five points for each variety shown in such collection, instead of allowing ten marks as a maximum in all cases.

The Massachusetts State Board of Agriculture has established a scale of

points for judging vegetables. Pamphlet forms, containing cuts and scale of points for two or three of the finest varieties of all the different vegetables, are being issued for the use of the Incorporated Agricultural Societies. This is one advance needed by all agricultural societies, as very often men are appointed to judge at shows who differ very widely in their ideal of a perfect specimen, and by having an authorized scale of points to guide them, much less unjust decision will often be given. As an example of their plan, we give scale of points given for "Beauty of Hebron" potatoes and tomatoes :—

Size—Should be 4½ inches long and 3½ inches wide for perfection—30 points.

Form—Should be according to engraving as given in pamphlet—30 points.

Smoothness—Free from deep pits, warts, or excrescences—30 points.

Quality—Fresh appearances, freedom from coarseness, and bright color—10 points.

Total, 100 points.

The following is the scale of points for tomatoes :—

Form—Should be according to engraving—40 points.

Color—Should be bright red or purplish pink, according to variety—30 points.

Size—Should not be less than 2½ inches, and not more than 3½ inches in diameter—15 points.

Quality—Firmness, ripeness, and freedom from green spots or cracks—15 points.

Cultivation of Orchards.—In a bulletin lately issued by Prof. Bailey, it is stated, in relation to fertilizers, that potash is the chief element needed in the soil, particularly after trees come into bearing. This is usually supplied in the form of muriate of potash, of which some 500 pounds, or even more, may be used to the acre annually in mature orchards. Wood ashes is also an admirable source of potash, and 40 or 50 bushels of unleached ashes to the acre is a fair supply. Phosphoric acid is the element of next importance, and from 300 to 500 pounds of plain superphosphate may be applied annually to an acre. Preparations of bone, and, perhaps, the Thomas slag also, furnish phosphoric acid in available form. When lands are properly cropped, nitrogen can be obtained most cheaply for orchards by plowing under nitrogenous green manures. As nitrogen is a great promotor of growth, it should be used with some caution, for orchard trees are grown for fruit rather than for timber.—Garden and Forest.

Outlines of Fruit.—The Country Gentleman advises those who desire to take impressions of fruits, in order to procure correct outlines and distinct records of their size and shape, to cut the fruit exactly through the middle with a sharp, thin-bladed knife, let it dry half an hour or so, to evaporate the juice on the surface ; then with a pen touch lightls the exterior of the face and stem with ink, and press it on unsized blotting paper, which will absorb the ink and make a perfect impression. Press every part well down. The moisture of the face will cause the ink to spread and make a soft shading.

HEATING WITH KEROSENE LAMPS.

A CORRESPONDENT of American Gardening has furnished that journal with the following plan and description of his greenhouse, heated with kerosene lamps, which is so concise and easily understood that all who desire can readily plan and heat a house on his system. In all respects the diagram faithfully represents one side of the original house on this system, and is drawn to a scale of one-quarter inch to one foot. The pipes are supported by the woodwork at the partition, and at three other points.

The boiler is attached to the pipes by two unions, as shown, and being very light and holding but little water, requires no other support. The shaded portion shows the space occupied by the water in the boiler. The boiler is shown in sections, its form being circular. Water is poured in at the "filler" shown. The expansion pipe is a safeguard against trouble from steam forming in the boiler, but in the original house that has never occurred and is not likely to.

Boiler is made of tin. By unscrewing the unions the water runs out and the boiler is taken off. It can, after drying, be painted inside by pouring in thin paint and rolling it about until the paint has touched every point. In this way the tin boiler has been preserved two years, and may last much longer, but copper would be better.

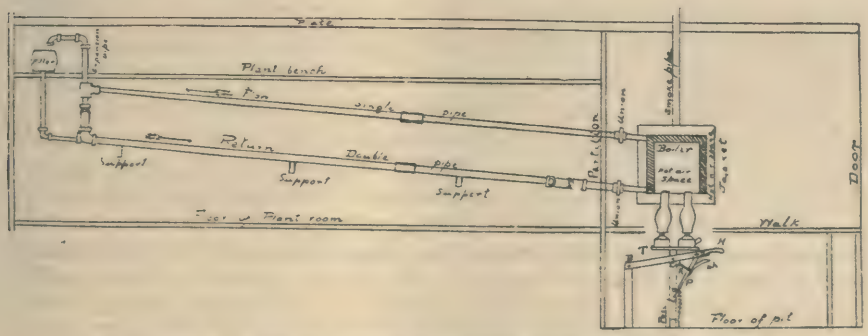


FIG. 712.—C. G. ATKINS' SYSTEM OF HEATING WITH KEROSENE LAMPS.

The "jacket" is, like the boiler, supported by the pipes. A short pipe is soldered into the boiler for the flow, and another for the return, and these reach out through the jacket and engage the unions.

The lamps stand on a table (T), which is just large enough to hold four lamps. The table has one leg under its center, which slides down into a hollow post, so that the lamps can be raised and lowered about six inches, great facilitating the work of caring for them. In the drawing the lamps are shown in

position for heating, and the table is kept up by the pawl (P) resting on the rack attached to the post. To lower the table and the lamps, grasp the handle (H), and with the forefinger reach down to the pawl handle (ph); disengage the pawl from the rack, and lower the table as far as desired. To raise it again simply lift on the handle (H); the rubber band (R) holds the pawl against the rack. The handle is pinned to the leg at C, and to a rear post at B, the rear post pinned at its foot (A). All the pins, A, B, C and D are loose, so that the parts will move freely.

FRUIT INSPECTION IN TORONTO.

THE subject of grading and inspection of fruit is a live one at present, and is being agitated in all our cities. A Toronto correspondent of the New York Fruit Trade Journal writes: "The fruit dealers and grocers of Toronto, Ont., have prepared a petition for presentation to the City Council, urging that body to secure legislation which will improve the methods of fruit packing along the following lines:—'That all fruits shall be graded when packed and plainly marked or branded 1st, 2nd and 3rd respectively; that all fruit baskets shall be of two sizes only, holding five quarts or ten quarts, and must contain said measure, strawberry and raspberry baskets alone excepted, which shall hold not less than one quart each; any fruit sold by weight shall have the net weight marked plainly on the package or basket; that all vegetables, except such as are sold by count, be sold by weight only; that any market inspector or fruit inspector, duly appointed by the council of any municipality, shall have power to and may examine any package, barrel or basket containing fruit or vegetables, and if he find the same to contain unsound fruit or vegetables, or fruit differing from the top layer, or inferior to the sample or class branded or marked thereon, he may confiscate the package, barrel or basket and its contents, and may, on a second offence, prosecute the offender or offenders.' The petitioners set forth that many fruit growers are careless in their packing and that the reputation of Toronto as the distributing centre for Ontario is injuriously affected in the English markets by the bad condition of fruit opened there, depressing prices and frequently spoiling the sale of several consignments."

All honest fruit-growers will unite with us in seeking for any legislation that will tend to save the good name of our country from being degraded in foreign markets, but we question the wisdom of some of these restrictions. For example, a quart basket is too large for raspberries; pints would be better for such soft fruit. Again, why should all fruit baskets hold either five or ten quarts of fruit? The sixteen quart is most convenient for wine grapes, and the twelve quart for apples and pears. Surely it is enough to have the weight marked on the package, and let all fruit be sold by the pound, leaving sizes to be adapted to the fruit being handled.

A SUCCESSFUL FRUIT-RETARDING HOUSE.

AT the recent meeting of our Association at Orillia, an inquiry was made regarding the advisability of building cold storage warehouses for fruit; and whether they should be placed in the great market centres, or in the fruit-growing districts. The prevailing opinions seemed to favor the former, but possibly the latter would serve a good purpose if not too expensive.

The editor of this journal would be glad to receive descriptions and drawings of such buildings as have proved successful in other places, for publication. In the mean time we give place to the following from the pen of Mr. E. G. Fowler, in the American Agriculturist:

"Very much attention has of late years been given to cooling and refrigerating houses, designed to preserve fruit for a time, prolonging its season and avoiding the necessity for marketing it when the market already has a surplus. Quite a large number of these have been built in the Hudson River fruit region, but they have hardly been conspicuous successes. This is not due to any radical defect in the principle upon which they have been constructed, but rather to the fact that too much has been expected of them. As a rule, they have been especially disastrous with grapes, though in isolated cases they have been successful with this fruit, prolonging the season and realizing better prices for the grower. Mr. W. D. Barnes and his son and partner, Edwin, Orange County, N. Y., are very intelligent and progressive fruit growers. In the fall of 1883 they built a cooling house on what is known as the Gerald plan, which is practically the same as that so generally used by the dressed beef companies all over the country. The building, of which we give a diagram, is of brick 18x36 feet in dimensions. Inside the brick wall is a six-inch air space, then four inches of sawdust, the latter separated from the air space by a board partition, papered on both sides. The entrance (see Fig. 713) is at *a*, which leads into a hall *b*, from which we pass through the door *c* into the refrigerating room *d*. Figure 714 shows the second or ice story. For a hall *a* is directly over the lower hall.

FIG. 713.

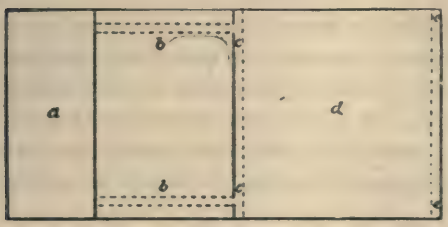


FIG. 714.

The large space *d* is the ice bin and the dotted lines *c c* and *e e* show openings in the floor. The parallel dotted lines *b b*, are two square box tubes for conveying warm air to the ice. The tubes pass through the floor at the lines *a*, pass on the floor to *c c*, when they turn upward at a right angle and empty the air directly on the store of ice. At *e e*, the partition for retaining the ice is slatted so that the air passes freely through it, dropping to the lower room. This method keeps the air in constant, but not rapid, motion. On the occasion of a recent visit to this cooler, it was being almost exclusively used for peaches. Messrs. Barnes & Son are large peach growers and they find the cooler of great benefit to them.

The peaches are picked in tray crates, such as are in common use among vineyardists in Western New York. They are very convenient, having slatted sides, thus affording an air circulation, and can be piled on the other as high as is desirable without injuring the fruit. When peaches are wanted, they are assorted, packed and shipped. The ripening of the peaches is retarded about a week or ten days, and it in no way impairs the quality of the fruit. A special

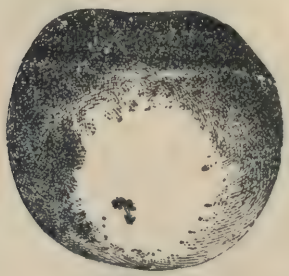


FIG. 715.

FIG. 716.

favorite is the Late Rose peach, and a walk in their peach orchard never fails to impress its value on the spectator. It is a very productive sort—it must be severely thinned if large, handsome fruit is desired. This they do, pulling off from one-half to three-quarters of the young fruit. The trees were heavily loaded, despite this severe thinning, with fruit of brilliant color and marvellous size. No stable manure is wanted in their peach orchards, they rely mainly on potash and phosphoric acid, which they find in wood ashes, kainit and ground bone. They prune differently from the methods in general use. Their trees are headed low in the beginning and they keep them so, cutting out large branches as freely as small ones, to accomplish their purpose. To grow high colored peaches is to get good prices, and to secure this color they use potash freely. An illustration is given of a bisected fruit, showing the comparative size of the stone, in Fig. 716, and in Fig. 715 one of an uncut specimen, both of which illustrations are a trifle under half the natural size. The fruit is white-fleshed, a perfect free stone, of high quality and a good seller."

NOTES ON VARIETIES TESTED.

The Williams' Strawberry.

I WISH to say after testing the above for ten years that I am safe in saying that there is no one strawberry as good for the general crop. It is large, handsome, a good shipper, very productive, and the quality is unsurpassed. As an old strawberry grower, I would advise all to drop such as the old Wilson, Crescent Seedling, Michel's Early, and many others, unless you are on a very early spot. But, remember those small strawberries are the means of making our market so low at times. If we all would aim to grow our berries better and to be more particular about the varieties we plant, we would get better prices and larger crops. The Williams plants can be had in many places at reasonable rates. It has a perfect bloom.

The Champion Peach.

A report on the above peach might not come amiss. The first year it came out I budded it on a four-year old tree. This year it had quite a few peaches of large size and of good quality. It is a white peach with a pale red tinge on one side, which gives it a rather rich appearance; but it rotted badly, which was quite a common thing among many peaches this year. But it has three bad points: It is a white flesh, ripens with the Early Crawfords, and it is not what you could call a freestone.

The Lovett White Peach.

The above fruited with me this year on a three-year old tree. If it does not do better as the tree gets older it will be of little use. It is a pure white peach; so far, small, of medium quality.

The Abundance Plum.

The above plum is worthy of a place in every orchard. It is a rampant grower, early and abundant bearer, of good quality and size, bears very young. It is said to be curculio proof, but this I cannot agree to; but so far I have not seen a single black knot on them. It is almost red, with a heavy bloom; ripens early, does best on heavy soil, but will grow where any other plum will grow.

The Wonderful Peach.

The above peach very much resembles the Smock, which has become very popular of late, but I think it is a little larger and of better quality. I had a five-year-old tree which they looked very fine on, but I had a limb on another tree which was some spotted, and some specimens cracked. It is a little tender in the nursery rows, but shows no signs of it as the tree gets older. It is worth trying; ripens with the Smock.

Niagara. W. H. LEE.

TOMATO GROWING FOR PROFIT;

Being a Practical Treatise, showing in Detail how to Grow Tomatoes by New Methods, from the Saving of the Seed to the Marketing of the Crop, so as to leave, when sold, the Largest Amount of Profit to the Producer.

The whole being the result of over Thirty Years' Extensive Practical Experience by the Author,

S. H. MITCHELL, Gardener, Florist and Seedsman,
ST. MARY'S, ONTARIO, CANADA.

PREFACE.

There can be no doubt but that it becomes the duty of each individual who has made growing of some *special crop* the study and practical work of a lifetime, to contribute the knowledge he has thus obtained for the good of society as a whole; more particularly is this the case when the experience of the individual is directly opposite to the practice and directions given by others.

Being a practical man, I hold that the best proof of any system *is success*. Beginning the cultivation of tomatoes over thirty years ago, without any capital except my own labor (if that can be called capital), I have succeeded in making every tomato crop yield a fair profit But, during the last fifteen years, by putting in practice the system described in this treatise, they have been far more profitable. So that I can say without egotism, that out of the profits I have been able to lay by something for myself and family for a rainy day.

I do not aspire to literary talent, or claim that my sentences are all grammatical, but I have endeavored to make everything so plain that all can understand, and put my methods into practice.

The great aim of this work is to point out how to grow and sell a crop of tomatoes in such a manner that, after all expenses are deducted, the largest *profits possible* will be left for the grower.

Although the instructions given are chiefly for the market gardener, and others who wish to grow the crop for profit, yet it will be quite easy for the amateur or private gardener to adopt them to suit his smallest requirements.

I might have written a chapter on growing tomatoes in fancys, *e. g.*, by tying them to stakes; by growing them on hoops; by pruning them once a week, or oftener, in order to encourage a more thorough ripening of the fruit, but such a chapter would be foreign to the design of this work. Those who wish to grow tomatoes in fanciful ways, and spend three to five times as much labor on them as is necessary, and then receive only half a crop, are welcome to do so. A bushel of tomatoes grown in these fanciful ways, if time and expense are counted, usually cost as much as two or three bushels bought at market price.

My main object in this work is, not to teach profitless fanciful ways to those who have plenty of time and money to spend, but to clearly point out how the poor industrious man can support his family and lay by something for the future, by growing tomatoes.

S. H. M.

The Garden and Lawn.

FLORICULTURE AS A BUSINESS FOR WOMEN.*

THIS is quite in keeping with her capabilities and tastes. What more congenial occupation for women than caring for the beautiful plants and flowers which the Creator of all has made! Moving this one into the sunshine, picking off dead leaves from another, giving all a motherly care! Peering into the face of this little flower and wondering how such lovely hues can possibly evolve themselves from such a homely little plant! Women seem endowed with a flower-loving nature, and never are quite content unless when the proud possessor of the most beautiful plants that can be obtained. In these days of social progress new and broader fields are opening out for the employment of women, and they are not limited to the teaching profession, which has always been crowded—the fine arts, manufacture of artificial flowers, designing and making of bonnets and gowns, or, as a last resort, the more menial and heavy work. But now, as the years go on we see the women of our country taking up the professions. They are lawyers, doctors, and even candidates for municipal honors; they are installed as clerks in stores, typewriters, and bookkeepers; and are now beginning to take a place as professional florists. The business of floriculture is not crowded, and there is always room for bright, thorough going, flower-loving women to make it a success. A natural correct taste is one of the requirements, and in recognizing the beautiful in color and form, and, above all, the harmonious and artistic combinations of these, women excel, and so are unequalled as designers and decorators in this line.

There are some women to-day throughout the country doing a profitable business as florists, being themselves both growers and business managers.

*A paper read before our Association at Orillia, by Miss Hodges, a practical florist.

Though we often hear arguments to the contrary, we have in the ranks of women a large percentage as agile, clear-headed and determined, and who might just as confidently expect success, as the men who are in business. This being the case. why may they not engage in a business so eminently suited to their refinement, taste and powers as the cultivation and commerce of plants, flowers and seeds?

An absolute necessity to success in the culture and disposal of plants—and without success there cannot even be pleasure—is a complete mastery of details, and this we assert, woman has pre-eminently—as is proven by her able management of the multitudinous duties which crowd each other in the daily routine of household work. Then to study the nature, habit, and all the conditions and requirements of the many genera of the flower world is a delightful exercise of the mind, and woman can delve into the minutiæ of the business with a zest that few men show.

A high standard of excellence is imperatively demanded by women, and where does the critic find a broader field for indulgence of discernment, comparison and taste? To be a florist should not be thought to be one whit less in importance than to be a dry-goods (or any other goods) merchant. The very nature of his calling should make him better, as intimate association with plants and flowers is in itself elevating. Many people associate with "florist" the idea of "gardener," a word which to them has meant a kind of "Jack of all trades," who looked after the cow, drove his master down town and back every day, attended the house furnace and took care of the greenhouse, kitchen and flower gardens in *his spare moments*, and was supposed to have vegetables and flowers ready for all occasions. Occasionally one would see this advertisement in the country papers: "Wanted—a gardener to look after the cow and horses, and make himself generally useful." But these are getting rare—like the Dodo bird, almost extinct.

A woman, to be a successful florist, must be on the alert for all the new and rare things in her line, and make specialties of plants which, after a fair test, she finds to be quick sellers and to give customers the best satisfaction. Again, patrons are of the most refined class of society, hence, in business associations, a florist mingles with people of taste and culture, which is one of the strongest proofs of the occupation being a suitable one for woman. In summing up briefly we find that women who wish to earn a livelihood may be successful florists. 1st. Because the business, from its nature and surroundings, is a suitable and elevating one for them. 2nd. Because they are naturally endowed with a plant-loving faculty, and to be successful one must have a congenial occupation. 3rd. Because they have the command over details necessary to the wants of so many and varied tender charges. 4th. Because when she has ventured into the, for so long to her, foreign realm of mercantile life, she has been found to be the peer of man, who so long has held the territory.

A TASTY WINDOW BOX.

ONE of the most satisfactory methods of adorning the inside of our houses is by the use of suitable plants, and this is an especially suitable season to remind our lady readers of that, when the winter season is not far off. The window offers a convenient spot for a box with choice plants, and will greatly assist the appearance of the room.

The beautiful box here shown is known as the "Minton tile window box," and is made in Minton tiles, decorated in yellow, blue and white, under a heavy glaze; substantial wooden mountings, natural dark finish; the interior is lined with zinc. The size is thirty-three inches long by nine inches wide and seven nches deep. The photograph was taken with plants in the box, and that helps to display its use. They are: one Dracæna indivisa, two Dracæna terminalis, two Anthericum vittatum var., two Cocos Weddeliana, two Asparagus tenuissimus, five Pellionia pulchra, the latter being the plant drooping down in front, and is extremely rich looking in contrast with the light colors of the box. This collection of plants, as is easily seen, makes an attractive box, and they are selected to withstand the temperature and peculiar atmospheric conditions of the ordinary living room, and would cost about $4. For a fancy box, such as the Minton tile, we would not advise very common or mean looking plants, they would be out of place, but it is not necessary that one should be without a

FIG. 717.—A CHARMING ARRANGEMENT FOR A WINDOW BOX.

window box if they cannot afford or do not care to invest so much money in one as this would cost—the price is about $5. With a saw, a hammer, a chisel, a few nails and lumber, a serviceable box can easily be made. Get one-inch planed pine boards, free from knots, and put them together so as to make a box of the same size as the one described ; or any size in length and width to suit your window, and paint it any desired color. Bore six half-inch augur holes in the bottom at equal distances, and the box is ready for the plants. If it is desired to have it a little more fancy in style, procure half-inch black walnut trimmings and tack them at top, bottom and ends, so as to make it look like a panel. A splendid decoration is oil-cloth of a tile or other pattern, cut to size and fastened on with the black walnut trimmings. A few geraniums, heliotropes, sweet allyssum, begonias and tropæolums to droop over the edge, will give a pretty effect. Such plants will grow easily, and can be procured at very little cost. A dozen plants should be enough, and any florist can supply them. If you have no soil, it would be better to get that also from the man who furnishes the plants. To give the collection a rich appearance it would be well to have one palm for the centre of the box. The illustration is from a photograph kindly supplied by Messrs. P. Henderson & Co.—American Gardening.

HOW I GROW BEGONIA RUBRA.

Young plants bought in the spring or else propagated from cuttings will make nice flowering plants for the following winter. This begonia likes a light rich soil, and during the summer it should be placed in a half shady place out of doors, and never allowed to get dry. It throws up new roots from the root stock every year and these bear the flowers the following winter and spring. These shoots will increase in size in proportion to the age of the plant so that four-year old plants will often throw out shoots six and seven feet high and one inch and more in diameter. There ought to be only the growth of the last two years left on the plants. Shoots that were thrown up in previous years should be cut close to the base of the plants. The new shoots have a tendency to keep on growing like a bamboo without branching, but to induce them to branch they should be cut off at a desired height, say about four feet from the ground. The top eye of the pruned shoot will at once start to grow and send up a strong single branch which is apparently determined to take the place of the cut off top of its parent. In examining now the base of this new branch we discover right at its starting point a lot of dormant eyes clustering close together, if the new branch is cut off right at its base all these dormant eyes will at once start to grow and form a beautiful crown. Plants grown in this manner will be literally covered throughout the latter part of winter and early spring with their drooping clusters of red flowers.—American Florist.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

COTONEASTER VULGARIS.—Prof. Saunders writes: "My impression is that this would make one of the most interesting of shrubs. It grows from three to four feet high. Although the flower is comparatively insignificant, the foliage is very pretty, and the bush is covered with red berries in the autumn and early winter."

A NEW WORK ON THE CULTIVATION OF THE TOMATO has been written by Mr. S. H. Mitchell, Gardener, St. Mary's, Ontario, and dedicated to the Fruit Growers' Association of Ontario. We have made arrangements with Mr. Mitchell for the publication of this work in chapters in the columns of this Journal; and the introductory portion appears in the present number.

COLUMBUS GOOSEBERRY.—Mr. Chas. Hunter, Toronto, writes: "I planted this variety in the spring of 1893. They fruited that year, just enough to show the form and quality. This year the bushes were heavily loaded, and the fruit was of the best quality, very large in size, oval in shape, quite smooth, and greenish-yellow in color. It is greatly superior to the Industry. No trace of mildew, and a most abundant bearer."

SUCCESS TO THE WORK OF THE GOOD ROADS ASSOCIATION.—Certainly the present system of statute labor as a means of caring for our roads is out of date. Mr. Patullo's address at our Orillia meeting was excellent, and his views that regular road gangs should be enployed, is worthy of general support. Then repairs would be attended to at once where needed, drainage would be done systematically, and all work done when it could be done to the best advantage.

THE RED BIETIGHEIMER APPLE.—We are much obliged to Mr. R. M. Palmer, Inspector of Fruit Pests, Victoria, B.C., for the following note on the Red Bietigheimer apple: "Regarding your notice of the Red Bietigheimer apple in December issue of the CANADIAN HORTICULTURIST, although the fruit is as stated, "large and handsome," the tree is a shy bearer in Lower British Columbia, and has no value for market purposes. Persons planting this variety here for profit will undoubtedly be disappointed."

THE POMOLOGICAL SOCIETY OF QUEBEC held their second annual meeting in the City of Quebec, on the 11th, 12th and 13th of December. They have an Honorary President in the person of the Hon. H. G. Joly, who gave the opening address His Honor the Lientenant Governor, and the Hon. Louis Beaubien, Commissioner of Agriculture, were also present and addressed the meeting. A letter was received by the writer, asking that he or some other representative attend their meeting, who in response sent a message of kind greetings. The reply was "Thanks for kind message. We are having a successful meeting."

QUEEN GOOSEBERRY.—We have received from Mr. S. Spillett, of Nantyr, some notes concerning the Queen gooseberry, a variety which he is now testing in his grounds, and in which he is much interested because of its vigor and healthy foliage. He says that he received it from Mr. A. M. Thayer, of Sparta, Wis., who writes concerning it that this berry was found in the garden of an old German, where it had been growing for many years with wonderful vigor. The bushes which he transplanted to his garden are now five feet high, six feet across, and have given a yield of thirty-two quarts of large berries. The color is greenish-yellow, and the quality excellent. Mr. Spillett is testing this variety at Nantyr, and will report to us upon its value for Canada later on.

AN IMPORTANT GATHERING.—One of the most progressive and, consequently, most valuable organizations to the fruit culturists of New York State, is the Western New York Horticultural Society. Some of the pioneer fruit-growers of this country were identified with its origin, and it has attracted to its membership many of the leading practical and scientific fruit culturists of that State, as well as representative men in other States and in Canada. This Society will celebrate its 40th anniversary January 23 and 24, in Rochester, N. Y., and while its meetings are celebrated for their attractiveness and great value, it is expected that the forthcoming 40th anniversary shall eclipse all annual gatherings that have preceded it. Its fruit exhibit, mid-winter though it be, is remarkable. At the last State Fair, at Syracuse, this Society's exhibit carried off the first prize of $200 for the largest and best collection. The annual "Proceedings" of the Society make a choice volume, not only of intensely practical information, but

of productions of exceptional literary merit, and is mailed free to all members who have paid the annual fee of one dollar, or a life membership of ten dollars. John Hall, Rochester, N. Y., is Sec.-Treas.

THE BOARD OF CONTROL of Experiment Stations met at the O. A. C. Guelph, on the 17th. The members are: President Mills, Prof. Hutt, Messrs. Smith, Pettit, Wellington and Woolverton.

The Secretary read the report of the year's operations, which he had prepared for publication in the Report of the Board of the Minister of Agriculture. After a full criticism and several amendments, it was passed.

It was also decided to accept the recommendations of the official visitors, and appoint John Mitchell, of Clarksburg, in the Beaver Valley, plum experimenter. This makes five stations, and it was decided to appoint five more, as soon as suitable new locations can be secured.

THE EXPERIMENTAL UNION, which met at the Ontario Agricultural College, Guelph, on the 17th and 18th, is an organization which is rapidly growing in influence. Composed largely of students and ex-students of the College, it has some of the most progressive farmers of Ontario among its active members, and the results of careful tests, noted by such men, added to those conducted by the able Secretary, Mr. Zavitz, on the College farm, must be of great value.

The presence of Mr. P. B. Perry, of Hudson, O, added great interest to the occasion. His talk on "Clover Culture," included a most interesting recital of practical experience, bearing out the discoveries of science. Once a schoolmaster, he had purchased an old run-down farm of fifty acres; but by growing a few acres of clover on it every year, and plowing under the second crop, he worked that farm into its present valuable condition. So fertile had it become, under this treatment, that it would now produce 200 bushels of potatoes to the acre, or 50 bushels of wheat. His regular rotation of crop was clover, potatoes, wheat.

THE NOVA SCOTIA SCHOOL OF HORTICULTURE will re open on Monday, Jan. 7th, 1895, with a four months' course in horticulture, especially adapted to young farmers and farmer's sons who can attend during the winter months. The lectures during the course are of such a nature as can be fully understood. No examinations required for admission. The instruction will cover such subjects as: formation of soils—their treatment, orcharding, vegetable gardening, nursery work, diseases of plants and their remedy, injurious insects and their treatment. The modern facilities in greenhouse, root cellar and plant house afford means for practical work in grafting, budding, pruning, seeding, cutting, etc., carrying on all kinds of work connected with horticulture on the farm. Students are asked to bring with them any problems along the line of horticulture, specimens of diseases, insects, soil, etc., for study in laboratory with

microscope, chemicals, etc. It is hoped that the young men of the Province will avail themselves of this opportunity and attend. Tuition is free. Apply early. Board at cost. Write for circulars and information to

PROF. E. F. FAVILLE, *Wolfville, N.S.*

COMPLIMENTARY.—We have a very nicely written, complimentary letter, concerning the excellent work of the Ontario Fruit Growers' Association, from Miss Grace Towey, a Gravenhurst young lady, which we gratefully acknowledge.

THE ELBERTA PEACH, according to Mr. J. H. Black, of Highston, N. Y., has been tried as far north as Poughkeepsie, and is perfectly hardy. He further writes, that our colored plate on page 305, Volume 18, does not do it justice The peach is more the shape of a lemon, of lemon-color, with less red, and prettier than as shown.

ERRATA.—On page 433, volume 17, credit article on "Utilizing Cellar's Warmth," to American Gardening; also on page 440, article on "A Cheap Greenhouse and Cold Frame," should be credited to the same journal.

THE ORILLIA MEETING of our Association last month, was one of the most enthusiastic and profitable we have had for a long time. The local interest was very great, and to the officers of the Orillia Horticultural Society is largely due the excellent results obtained. From Tuesday evening until Thursday evening the meetings continued without flagging in the least. The programme was not completed even then, but an invitation from the Mayor and Corporation of Orillia to visit the town, and from Principal Beaton to visit the Asylum having been accepted, it was necessary to close and do this on the Friday morning.

Some of the papers read appear in this number, and the whole report will be placed in the hands of our readers as early as possible. We were very fortunate in having with us representatives of so many Colleges and Experimental Stations, which gave so much weight and value to the record of the proceedings.

The drive out to the Asylum for Idiots, on Friday, was delightful. It is beautifully situated on an eminence overlooking Lake Simcoe. It is a magnificent pile, lately erected by the Province of Ontario; the rooms are spacious, the halls broad, the reception rooms elegant, and indeed everything about the place is most homelike and appropriate. The Principal is ably assisted by six lady teachers, viz.: Miss Christie, Miss Lafferty, Mrs. Anderson, Mrs. Clifford, Miss Fielding and Miss Oaten, whose faithful industry and enthusiasm in their work deserves especial mention. There are 550 inmates, over one hundred of whom are children, and these latter are being taught such things as their weak minds can follow. Only a philanthropic spirit can support one when engaged in work among such caricatures of humanity, and where so little response is shown to patient endeavor. The salaries of these earnest teachers deserve to be doubled.

After lunch and speeches at the Asylum, the whole party visited the residence of Mr. Stevenson, the Secretary of the Orillia Society, so romantically situated on the shore of Lake Couchiching, half hidden away by beautiful climbers, and grand old forest trees. No wonder he calls it the "Hermitage." Here Mr. Stevenson indulges his taste for the æsthetic in nature, as well as in many branches of practical fruit growing.

One special feature of our Orillia meeting was the presence of so large a number of ladies; and that two of them, Mrs. McHennell and Miss Hodge, contributed papers. These were much appreciated, and will appear in our report. That by Miss Hodge appears in this number of our Journal; she is a practical florist and all she says will be duly appreciated.

The next meeting will be held in Woodstock, in December.

GRADES OF CANADIAN APPLES.

By favor of the Hon. J. F. Wood, we have received a copy of amendment to the General Inspection Act, assented to 1st April, 1893—so far as regards the grades defined for Canadian apples. It is as follows:—

1. The section, numbered one hundred and ten, added to *The General Inspection Act*, chapter ninety-nine of the Revised Statutes, by section seven of chapter twenty-three of the Statutes of 1892, is hereby repealed and the following substituted therefor:—

"**110.** No 1 inspected Canadian apples shall consist of well grown specimens of one variety, of nearly uniform size, of good color, sound, free from scab, worm-holes and bruises, and properly packed.

"2 No. 2 inspected Canadian apples shall consist of specimens of one variety, reasonably free from the defects mentioned in class No. 1, but which, on account of inequality of size, lack of color, or other defects, could not be included in that class."

This much then should be quite satisfactory to fruit growers generally in Ontario, who should now be able to quote prices direct to English wholesale buyers, and even to retail grocers and private consumers, f.o.b., on these well defined grades.

If then the fruit is according to grade agreed upon, it is a sale; and much better prices would result, providing confidence can once be established.

The next question is concerning the appointment of an inspector, who could, on request, inspect and place the Government brand upon the fruit if true to grade. It should also be his duty to prevent, as far as possible, the sale of all fruit which is fraudulently packed, either when offered for sale in home markets, or when being shipped for export.

Something of this kind is necessary to prevent Canadian apples from losing their fair name abroad, which their excellence really deserves.

Question Drawer.

Cabbage Fly and Onion Maggot.

684. What, in your opinion, is the most effective means (without change of ground) of preventing the ravages of the onion and cabbage maggot?

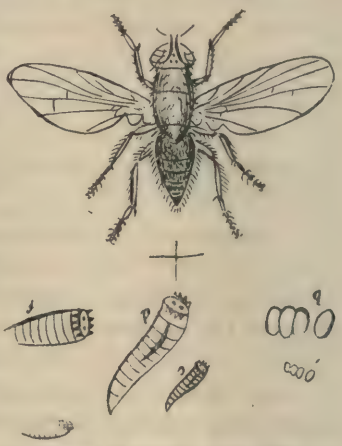
In reply, we quote from Bulletin 11, of the Central Experimental Farm.

Fig. 719.

Imported Cabbage Butterfly (*Pieris rapæ*, L.).—The white butterflies which fly over cabbage beds during summer, lay eggs on the leaves, from which are hatched the troublesome Cabbage-worms.

Remedies.—The best remedy for this insect is undoubtedly insect powder diluted with four times its weight of common flour.

Onion Maggot (*Phorbia ceparum*, Meigen).—Equalling in destructiveness and more difficult to deal with than the Cabbage and Radish Maggots, is the Onion Maggot (Fig. 720.)



Onion Maggot.—Fig. 720.

Remedies. — Rich, well-worked soil and early planting are advised.

1. Kerosene emulsion watered along the rows when the onions are found to be infested, has proved successful.

2. A sprinkling of gas-lime, sown broadcast over the beds every two weeks, was also found to protect the crops considerably, and was thought to act as a good fertilizer.

Suggestion.—I would suggest the use of nitrate of soda, at the rate of 200 lbs. to the acre; this is a valuable fertilizer, and has been found of marked use in checking the ravages of the Cabbage Maggot. In addition to nitrate of soda, kainit has been used with great success in the State of New Jersey, by some of the large vegetable growers.

Tomato Rot.

685. What is the best preventive for tomato rot? Is there any preventive for the ravages of cut-worms in strawberry plantations?

Reply by Prof. Fletcher, of Central Experimental Farm, Ottawa.

If true cut-worms are really meant in this question, my answer is that the best remedy is the use of the poisoned traps mentioned on page 27 of Bulletin

11. But if white grubs, or larvæ of the June beetle are meant, the best remedy is adopting the one year system of growing strawberries, as recommended some years ago by Mr. Dempsey, in one of our Fruit Growers' Association reports. By this method the old plants are ploughed up as soon as the runners are rooted, the latter only being left, every year.

Peaches for Brant County.

686. SIR,—Could you name any peaches that are more suited to this section than Crosby, Hyne's Surprise, Horton's Rivers, Early Crawford? This latter does not seem to succeed well in this section.

ED. MAUS, *Echo Place.*

Reply by W. W. Hillborn, Leamington.

I would recommend Alexander, Barnard, Crosby, Tyehurst, Hill's Chili. The two latter are the most hardy of any that I have thoroughly tested in this locality.

Dwarf Apples.

687. SIR,—Please give me your opinion of dwarf apples. Are they hardy and productive? WM. HANNA, *Rockton, Ont.*

Apples trees are dwarfed by grafting or budding them on the slow growing Paradise stock. This is thought to be hardy, and on that account much planted about Montreal, but the chief value of dwarf apples is their early fruiting, and the fact that they can be kept in such small compass that a great many varieties can be grown in a small garden. Tree for tree, when full grown, they are not capable of producing nearly as much as standards. Besides many excellent varieties are quite hardy in the cold sections.

Open Letters.

The Fameuse Apple.

SIR,—Please accept this Christmas box of Huron Snow apples; it will perhaps strengthen your opinion as to their place as a dessert apple when properly grown, and, thanks to the knowledge of spraying, my one tree gave me three barrels of splendid apples, perfectly free from worms and very little scab. And I remember with pleasure the social chat we had in your little office at the World's Fair on its merits as a dessert apple, and I am in great hopes of it being reinstated to its well-known high place among dessert apples through proper spraying. Wishing you a merry Christmas and happy New Year.

W. WARNOCK, *Goderich.*

We sincerely re-echo the wish of our correspondent concerning this excellent apple, which is unsurpassed for dessert purposes, and would be a source of

untold wealth to Canadian apple growers if it could be grown to perfection as of old, and properly placed in those markets where it would be most appreciated.

Red Raspberries for Profit.

An article on page 426 of the December HORTICULTURIST taken from the Country Gentleman, calls for some comment. Evidently the writer has very little experience, as he does not even know the Cuthbert raspberry with any certainty. Evidently he has planted a few hills on a choice spot, as he has, he says, picked four to five quarts from hills containing about that number of canes. Such canes deserve some sympathy. He thinks that three quarts per hill could be reckoned upon. An acre would yield 7,500 quarts, which at 10c. each would mean $750. All this can be done upon paper, and this is where the writer does it. If he, or any one else, attempts to do it on any ordinary soil he will do remarkably well if he reaches one-third of the above amount. "It costs no more to pick them than it does to pick strawberries," says this writer. Any child in any berry region could tell him better than that. "The care and cultivation occupy much less time than strawberries and are consequently much less expensive," according to this fruit boomer. Sometimes people write upon fruit growing who would shine as novelists. A lively imagination is very nice, but it needs a special soil with lots of manure, lots of work, and two or three years of time to get a good crop of red raspberries. It costs more to grow them, more to pick them, and the yield is less than that of strawberries.

Hitherto raspberries have brought better prices and have paid as well where soil, etc., were suitable. Just now there is danger of over-production, and reckless writers may increase that difficulty. Red raspberries on rich soils should be planted in rows about 6 feet asunder with hills three to four feet asunder. Many soils are not suited to them, and many people are not suited to the business of caring for them. With the right man and the right soil near a good market, they pay as well as most fruits or vegetables—"only that and nothing more"

E. MORDEN, *Niagara Falls South, Ont.*

Fruit Growing in Muskoka.

SIR,—I have just had the pleasure of attending the Fruit Growers' Convention in Orillia, and, as I have been a member of the Society for some years, I had often wished to attend a Convention.

My attention was drawn to what appeared to be a wrong impression among the members with regard to fruit growing in Muskoka Now we certainly do not grow peaches; but our strawberries, currants, grapes and apples would compare favorably with any grown farther south.

We can say from experience that strawberries are as successful and profitable in Muskoka as anywhere in Canada. The last two years, our first picking sold on June 22nd, brought 12½ cents a basket, and 8 cents is an average price for the season. In apples, we have Tetofsky, Duchess, Alexander, Gideon, Wealthy, Mann, Ben Davis, and some others, which have all proved hardy and yielded good crops. Any Crab apples planted have always proved successful, and we have some excellent varieties; but of late years they are only considered as secondary, as standard apples are quite successful if carefully cultivated. As there is no limestone, we supply the want by applying hardwood ashes, which is abundant.

Plums and pears have not been cultivated enough to show how they would succeed, yet we have a good variety of wild plum that is cultivated by some and is excellent for preserving. In apples, this spring, we planted McIntosh Red, Ontario, Pewaukee, Princess Louise, Yellow Transparent and Red Bietigheimer. If these kinds prove hardy, I think we will have a good selection of early summer and late winter apples. One trouble with us is, we have to pay high prices for nursery stock and do not always get trees true to name, which often proves disappointing. If any of the Stations would kindly spare us a dozen of trees, each tree of different variety, we would pay every attention to their cultivation and report on the same as required. My letter has reference to that portion of Muskoka lying along the east shore of Lake Muskoka.

If anyone should wish to ask any questions with regard to fruit growing in this section, we will try to give all the information possible on the subject.

JESSE PARKER, *Gravenhurst.*

Experience in Tile Draining.

SIR,—The following experience I have had with drain pipes may be of assistance and benefit to readers of the HORTICULTURIST. In 1891 I tile-drained four acres of heavy clay land. These drains emptied into a six inch sewer pipe running from centre of land to the lake, the shoulders of sewer pipe being put together with blue clay. In 1892 the drains worked well, in 1893 very badly, and the present year they would not work at all: my cellar, which also had a pipe to the sewer, being flooded with back water. Feeling sure there was some stoppage of the main pipes, I had drain examined, and it was found that the roots of two willow trees that stood outside the grounds had gone down eight feet into the clay, sent rootlets through the blue clay in shoulders of sewer pipes, and filled up the drain completely for a distance of 25 feet, making it impossible for water to escape. The roots of these willows were found in the drain for a distance of 108 feet inside of pipes. The outside of the pipes were so encircled with the roots that they had to be cut away. One of the trees was 7 feet away from the pipe, the other 18 feet.

It is not unusual for willows to send roots long distances for water, and I expected this, but supposed the sewer pipe shouldered with blue clay would have been sufficient protection. They are now put in with cement, and the willows cut down. I send you to-day by post section of rootlets as taken from pipe.

CHARLES HUNTER, *Toronto.*

Non-Fertilization of Grape Flowers.

SIR,—I have had a little experience with some grape vines that I am sorry I did not relate at Orillia, as it substantiates Prof. Beach's contention. Four trellises of six vines each were planted side by side; two trellises were Rogers' No. 9, the other two were Niagara, Worden and Moore's Early. I removed the latter two, after which Rogers' No. 9 never bore another grape, but fell off when as large as No. 8 shot. I dug them all up.

STANLEY SPILLETT.

Plum Growing, Etc.

Where can I get a good book on plum growing? What plums are the hardiest and best? What soil is best for the plum? What fertilizer is best? What are the hardiest varieties of peaches and apricots?

ALVIN STOWE, *Cedar Springs, Ont.*

Question Budget.

Replies to these questions are solicited from our readers.

1. I have the Glass seedling plum, which I received from the Association. It has grown to be a large tree and hardy, standing the severe winter of some dozen years ago, when most other varieties of plums perished. It bears a large bluish purple plum, but with me it is a very shy bearer, perhaps from ten to twenty plums in a year. Now I see other accounts, that it is a very productive variety. Now my tree is standing in an apple and pear orchard, away from any other plum trees, and perhaps it requires some other variety of plum near it, to fertilize it. Can you throw any light on the matter?

JOHN M. MCAINSH, *W. Nissouri, Co. Middlesex.*

2. What is the best kind of artificial fertilizer for raspberries, and what quantity should be applied per acre to plants on strong clay loam?

W. J. R., *Oshawa.*

3. I think of planting a set of roses in the spring. I have been reading the Hon. Mrs. Lambert's nicely written article in your August number, and intend to adopt her list of hardy roses. Am I to understand from her article that neither yellow nor moss roses require covering in the latitude of Ottawa? What is meant by remontant and non-remontant roses? A word regarding the various insects and how to combat them would be interesting.

NOVICE, *Guelph.*

4. I see in your valuable report, advice about ploughing in autumn to kill grass-hoppers. Would it do any good to harrow in grass lands in autumn, with a sharp harrow for the same purpose?

PETER BRENNAN, *Lakeside.*

5.—Will our readers please send in their replies to these questions for publication? We want the experience of the many in such questions.

Best Varieties to Plant in Southern Ontario.

1st. What sorts would you select if planting 1,500 peach trees for best results?

2nd. What would you plant for best sorts of plum if planting, say, 200 trees?

3rd. If planting, say, 200 pear, dwarf, or standard, which sort would you choose for best results and earliest returns?

4th. If setting out 100 cherry what would you choose on for best results and shortest time?

5th. If setting out 2,000 grapes, what would you plant for the very best and earliest return?

6th. What should the crop from the above amount of trees and vines be worth at the sixth year from planting, or an average with former years past? Hope you can give me some idea in this matter.

Yours truly, W. CAMPBELL.

Our Markets.

New York.—Messrs. Palmer & Frost report, December, 12th ult. :—Apples, Spitz, $2.50 to $3.50; King, $2.50 to $3.25; Snow, $2 00 to $2.75; Spy, $1 75 to $2.25; Baldwin, $1.50 to $2.00; Greening, $1.75 to $2.50; Common, 75c. to $1.25; Grapes West N. Y., Catabas, 11c. to 13c.; Concord, 11c. to 13c.; wine grapes, 2c. to 2½c. Evaporated apples, 7½c. to 8½; raspberries, 18c. to 18½c.; beans, marrow, $2.25 to $2.27½; medium, $150 to $1.75; white kidney, $2 30 to $2.35; red kidney, $2.10 to $2.15; chestnuts, $1.50 to $2.50 per bushel; hickory nuts, $2.50 to $2 75.

England.—Messrs. John Seed & Son, of Hull, report on apples as follows :—Demand continues good at unchanged prices, and sound parcels meet ready sale at full values. For consignments of Baldwins *ex* "Bostonian," (*via* Liverpool), prices ranged from 12/5 to 13/6 per barrel for "Tights" with "Slacks" 1/ lower. Other varieties at above prices. No Canadian fruit on the market.

Liverpool.—Messrs. Simons, Shuttleworth, cable Dec. 19th :—Market opened weak and closed the same; demand not equal to the supply: Baldwins, Greenings and Spies, 12/6 to 16/; G. Russets, 14/ to 16/6; Kings, 17/ to 19/; Cranberry and Ribston Pippins, 15/ to 17/6; R. Russets, 11/6 to 13/; C. Reds and Seeks, 12/ to 13/6. Only choicest fruit reached top prices. Lower grades and conditions, 4/ to 6/ less.

The Trade Bulletin says :—Cable advices just received report a much better state of affairs in the Liverpool apple market, one report of Wednesday's sales stating: Market lively; Baldwins 12/ to 18/, Greenings 14/6 to 20/, Spies 14/ to 18/, Russets 15/ to 17/6, Kings 20/ to 28/. Another cable said: Market opened strong, and continued so during the day. The outlook is favorable so long as shipments continue light. Baldwins 13/ to 16/; Spies 11/ to 14; Greenings 13/ to 16/; Russets 11/ to 14/; Kings 19/ to 20/. Some fancy fruit brought higher quotations.

In this market there is a better feeling in sympathy with better news from Liverpool, and we quote fine winter assortments $2.00 to $2.25 for round lots, and fancy stock at $2 50 to $3.00. Poor stock, however, is difficult to sell, about 300 to 400 bbls. bringing on Wednesday $1.50 to $1.75 per bbl. Advices from the West report the sales of two cars of fancy Baldwins, Spies and Greenings at $2.60, and 500 bbls. do. at $2.50 f. o. b. Returns from a lot of Maine Baldwins sold in Leith show $1.75 net to the shipper.

OXALIS ALBA (IMPROVED).

THE

Canadian Horticulturist

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THE OXALIS.

MOST of our housekeepers who are flower lovers have taken pleasure in the thrift and daintiness of the old-fashioned *Oxalis rosea* and also *Oxalis alba*, which they generally know as pink and white Shamrock : but they have not discovered half the possibilities of this gem of plants. It embraces a number of species of pretty, neat growing plants, elegant in foliage and bloom, the latter being produced in great profusion, and embracing a wide range of color. It is one of the most satisfactory of bulbs for window culture. For potting, use a good rich soil with a sprinkle of sand in it, placing from one to three bulbs in a four inch pot ; stand in a dark cool place for a few weeks to root thoroughly, then remove to a sunny situation in the window, or conservatory, in a temperature of about 60° Fahr. One of the best varieties for window culture is Oxalis alba illustrated by the accompanying cut. It will be seen that this is not the old Oxalis alba, but an improved Oxalis alba, having much larger blooms and of which the foliage branches out from a parent stem. Its dwarf, spreading habit and profuse bloom make it unsurpassed as a table plant. Flowers and leaves fold at night and open in the morning as with the old variety ; unless the plant is grown in a partially shaded situation, when the flowers remain open all night. Oxalis Bermuda buttercup, the newest of yellows, is of more luxuriant growth, and blooms in greater profusion than Oxalis alba ; one bulb will be sufficient for a five or six inch pot. The flowers are of purest buttercup-yellow, and of great substance. Well-grown plants have produced as many as seventy-five flower-stems and over one thousand blooms in one season. The bulbs of this Oxalis have been grown in the congenial soil and climate of Bermuda, until the bulbs

have attained great strength, hence the wonderful flower productiveness. I might here mention Oxalis lutea, a splendid large, canary-yellow, of strong, upright growth ; the leaves of a dull green color, with a deep purple tint on the reverse side. This, in a small pot, will materially brighten up a collection of plants. While growing, the plant should be frequently turned so that all sides may get the power of the sun, that the growth may be symmetrical. Water regularly, making sure the roots, as well as the upper soil, get the water, if you wish a thrifty plant, one which will, through its season remain a thing of beauty. During the resting season, which varies somewhat with different varieties, but which usually takes place about autumn, the plants should be watered sparingly, once or twice a week according to the moisture of the atmosphere. One last word ; if you can only grow one kind, grow alba.

Commercial Greenhouses, Orillia. M. HODGES.

PRUNING RASPBERRY PLANTS.

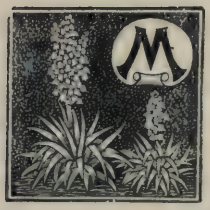
In sections where large quantities of the Black Cap raspberries are cultivated, there has been a radical change within the past ten years in the management of the plants. Formerly the old canes that produced fruit were not cut out until the following spring. Now, however, just as soon as the fruit is gathered pruning is begun. The canes are cut off as near the ground as possible, with a hook-bladed knife, attached to an old hoe handle. The canes thus removed are carried out and burned in a week or ten days, as they dry very rapidly in September. After the field is cleared from brush, the space between the rows is ploughed. Throwing a light furrow up to and among the new growth of canes allows the rain to settle the earth firmly about the plants, keeping them in an upright position. No other cultivation is given them until the following spring, when, after removing some of the lateral shoots, and perhaps some of the top, the ground is harrowed thoroughly. The surface soil between the rows should be level again by this time. On land moderately free from weeds three cultivations from the opening of spring until harvest time will prove sufficient. By this system of summer pruning, the new growth has a better chance to develop into more bushy and symmetrical plants, and they also can and do absorb the strength that would otherwise go to mature the wood and ripen the leaves upon the canes removed. The raspberry being a very exhaustive crop, this early removing of all wood that has served its usefulness should be promptly attended to. After raspberries have reached the bearing age, the second summer after planting, this system is followed until the plants run out, which is in about six years, much of course depending upon the attention they have received. Red raspberries and blackberries should receive similar treatment as regards pruning and cultivation.—Colman's Rural World.

THE QUINCE.

CONSIDERING the ready sale there is for the fruit of the quince, it is a wonder that there is not more effort made to understand the nature of this bush. The numerous complaints of inability to get satisfaction from trees set out, show that their needs are not understood. Only lately a neighbor, a farmer, was speaking to me of the unprofitable apple trees he had. I casually observed that I supposed paid attention to getting borers out of the stems every year, and he to my surprise he answered that he had never done so, but had left the trees to their chances. Of course, it did no good to tell this man that the trees had evidently taken chances against him. It was too late to remedy the evil, for I found on visiting his place later that the high wind had broken off some of his trees where the borers had weakened them. This neighbor does not take any other agricultural periodical, but he has an almanac, and I found he had lots to say about "planting in the signs." It was a complaint he made to me about his ill-luck with quinces that brought to my mind how common it is to hear others say the same thing. And this, too, in the face of the fact that this bush will flourish almost anywhere where the ground is rich. I have seen quinces on high ground, and in low ground, and growing well in both places when well fed. If the choice offered I would take a rather low situation in preference to a high one, because of the chances of deeper soil. What it demands and will not thrive without, is richness of soil and coolness about the roots. Instead of allowing weeds to grow and cultivating to get rid of them, it is far better to spread a thick mulch of straw or manure about them. This keeps weeds down, keeps roots cool and enriches the ground, all to the great advantage of the trees. When so treated I have known quinces to thrive and bear regular crops for years. When in good soil and situation there is no more regular bearing fruit than the quince. When about to plant one of them, see that it is quite free from borers. Then, in June and September every year, see that no borers have made a lodgment. Do not let the bush run to top, but prune it every winter, in such a way that there will always be some new shoots, and some of them spring from near the ground. When the soil is not over rich, liquid manure is a good thing for them, preserving the foliage green and fresh until the latest days in fall. In regard to variety, the Orange is the most satisfactory of all.—Practical Farmer.

Cabbage Salad—Chop a firm white cabbage with a sharp knife. A dull one bruises it. Make a dressing of two tablespoonfuls of oil, six of vinegar, a teaspoonful each of salt and sugar, half as much each of made mustard and pepper. Work all in well, the vinegar going in last, and then beat in a raw egg, whipped light. Pour over the salad, toss up with a fork, and serve in a glass dish.

THE GROWING OF MUSHROOMS.



MUSHROOMS are anything but widely appreciated as food in America. And yet there is no country richer in mushroom food, growing spontaneously, than is ours. Were the people of Germany, Italy, France, or Russia to see our clearings during the autumn rains they would feast on the rich food which in many places here goes to waste. It is the epicures of America, in fact, who appreciate this food, paying fancy prices for it in the markets.

The economic value of mushroom diet is placed as second to meat alone. With bread, and mushrooms properly prepared, a person may neglect the butcher during the season when this growth may be gathered. Mushrooms, as Professor Palmer has stated, make the same use of the air we breathe as is made by animals; when cooked they resemble no other form of vegetable food, and in decay their odor in some cases cannot be distinguished from that of putrid meat. Certain it is that the parasol-like growth used for food, and which springs up in a night, is not a plant in any sense. It is rather analogous to a flower, bearing, as it does, the spores that are analogous to seeds. The true plant

FIG. 721.—THE COMMON MUSHROOMS (*Agaricus campestris*).

which feeds, grows and finally prepares to flower, is the network of whitish threads which form what is commonly known as the "spawn," or, botanically, the mycelium of the mushroom.

It is to the garden or indoor culture of the Common Mushroom, *Agaricus campestris*, shown in our engraving, that we desire here to call attention. There is an ease and novelty about this business which should make it attractive, not

only to all amateurs for home use. but to commercial gardeners near all large towns. Some of the largest profits the writer has ever made in gardening were by growing mushrooms under greenhouse benches in winter, and selling them in the Buffalo market, at from 50 cents to $1 a pound at wholesale.

The conditions necessary to success consist in growing them in very rich soil, the indispensable ingredient of which is horse manure, and in a steady temperature. Any place, such as a cellar, shed, greenhouse pit, space under the benches, etc., where, either naturally or by the use of artificial means, a temperature of from 50° to 60° may be had, will answer. Good drainage must also be provided, hence, a shelf as in the lower figure, or a series of shelves, may readily be employed to hold beds.

The manure should be dry and freed as much as possible of straw or other litter by shaking out. Manure alone can be used in which to grow them, by repeatedly treading it down and throwing over to get rid of its greatest heat, but usually it is preferred to mix from one-fourth its bulk to equal its bulk with good garden soil. It is best to allow something of an accumulation before putting down into beds.

FIG. 722.—MUSHROOM BED ON SHELF NEAR THE FLOOR.

The manure ready, and it may at once be made into beds. The beds may be of most any shape or size desired, but experience proves that to have them from two to four feet wide, and about 20 inches deep answers about the best. Where there is a good deal of room it is well to make the beds more or less sloping at the sides Beds may also be made in old tubs, in casks sawed in two, or in boxes. In this way they could, after the making and for cropping, be carried into cellars or other parts of dwelling houses where one would not like to bring in the manure in its rough form. We see no reason indeed why the preparing and selling of mushroom boxes, to be grown in houses, should not in some places become a profitable branch of the gardener's business.

In putting down the manure and soil, it should be firmly packed, layer by layer, with a brick or other weight. A thermometer should at some central point be imbedded into the soil, with its bulb some three inches below the surface. The probability is that the temperature in the bed will rise for a few days and then begin to lower. When it reaches about 80° the bed is ready to spawn.

Spawn may be purchased in bricks of all seedsmen for the start in mushroom culture; once begun and any of the white spawn-flecked earth of an old bed will answer for planting new beds.

For inserting, the bricks or pieces of spawn are first broken to half the size of a hand lengthwise, or some less. These are placed into the top and other exposed surfaces of the bed, at about ten inches apart, and half as deep, covering up firmly. After some ten days spread over the bed about three inches of fresh loam, and then wait for your crop. This should begin to show a few weeks later, varying somewhat according to temperature.

It is often possible to dispense with watering the beds, this being only necessary when the surface gets quite dry. Then water carefully, using water heated to about 100 degrees.

By making up beds at intervals of ten or twelve weeks throughout the year a continuous supply of mushrooms may be secured. The product is usually salable at all seasons in limited quantities. It is to be hoped that the consumption of this valuable food article will greatly increase in the near future. Let our readers in general inaugurate the growing and using of mushrooms commonly.—Popular Gardening.

Raising Cuttings in Water.—Almost any plants with comparatively hard wood, can be made to root by being placed in bottles of water. The oleander is a familiar illustration—the ivy also can be easily raised this way. After the roots have become strong in the water, the plants can be taken out and placed in earth. For this, perhaps it is better to let the water continue stagnant in the bottles—a change of water is not beneficial. In these cases, the gases necessary to aid in the life of the plant are furnished by the decaying materials which cause the water to become stagnant. Even soft-wood cuttings will root readily in sand with water. A saucer of sand, for instance, filled with water, is all that is needed to root many soft-wood cuttings. These saucers with the cuttings should be kept shaded for a day or two, and then placed in the full light. If placed at once in the full light they are liable to wilt.—Meehans' Monthly for January.

Top-Dressing Lawns.—To make a bright green sward next season, a good top-dressing on the lawn, during the winter, should not be neglected, and the earlier the work is accomplished, the greater will be the result. The continuous mowing during the summer, without giving any stimulant to the soil, soon weakens the grass until it finally dies out. Well-rotted manure for the winter is probably the best remedy, though many prefer to use wood-ashes, guano, ground bone or other commercial fertilizers, as being less likely to introduce seeds of noxious weeds.—Meehans' Monthly for January.

ORNAMENTALS.

OF all the sumachs, the dwarf shining one, *Rhus copallina*, makes the best display of all. When in flower it is most beautiful. It grows but a few feet in height, and flowers when not more than two feet high, bearing large panicles of yellowish-white flowers (and how the bees enjoy the flowers!); then, when fall comes, the foliage changes to the beautiful yellow and scarlet that most sumachs are noted for.

Too much praise cannot be given to the Rose of Sharon, Hibiscus Syriacus. It exists in perhaps half a hundred good varieties, some single, some double, and some with variegated foliage. Besides this, there are early sorts and late ones, so that by getting a dozen sorts, flowers from one of the other would be had from early August to October.

When the fruit of magnolias is ripe, the trees are even prettier than when in flower. *Acuminata*, *hypoleuca* and *tripetala* are full of carmine-colored fruit, which contrasts nicely with their large green leaves. Tripetala has conical-shaped cones of rich carmine, and it is a worthy tree at all seasons of the year.

FIG. 723.—SALISBURIA ADIANTIFOLIA.

Another tree in fruit is the gingko, or maiden hair tree, *Salisburia adiantifolia*. This singular looking Japanese tree has rather inconspicuous flowers, but it bears round, yellow, plum like seeds. There is an avenue of this tree in front of the agricultural building, Washington, Chief Saunders deciding on this tree, after considerable thought, as he told me, as being well in keeping with the surroundings. There are now many fruiting trees of it about Philadelphia, though not until a few years ago did they begin to bear fruit.—Country Gentleman.

SUCCESS WITH GRAFTING THE GRAPE.—Mr. A. Young, of Wellandport, writes, that last summer, having some poor varieties of grapes, and much neglected, he sawed them off a little below the surface and grafted six with Vergennes. Four of the grafts grew, one of them 10 feet 6 inches; another bore two bunches of grapes.

COLD STORAGE PLANT.

THE experiments with cold storage were made in New York eighteen years ago, and developed into a commercial industry three years later, says Garden and Forest. Since then the knowledge of scientists and inventors has been combined with the practical experience and capital of warehousemen, until now the business of cold storage and freezing is a considerable factor in the market supply of the world. At first cold air for refrigerators on the ground floor was forced to storerooms above, but this plan was soon given up for the system, still in limited use, of massing ice at the top of the building, so that a current of cold air is drawn by gravity through shafts to the lower floors. By this system only cold storage at 38 degrees and above is possible, while actual freezing is necessary for many classes of goods.

One of the nine large cold storage warehouses in New York uses a system of metal pipes ten inches in diameter, which encircle storage rooms. These begin below the "charging floor," the upper story of the building. Here ice is broken by hand power, the sectional trap doors are lifted, and the pipes set close beside each other and extending down on the floors below, are closely packed with ice and salt. The drainage from these, which is collected on the second floor, is utilized to cool rooms on the ground floor to a temperature of 40 degrees. This method of cold storage is especially adapted for holding comparatively small amounts of perishable goods, without the cost of expensive machinery.

The system most generally in use, however, is that of producing intense cold by the evaporation of ammonia, and one of the largest and best-equipped cold warehouses uses the so called "direct expansion" system, which it is not necessary here to explain. In this immense establishment which comprises in two warehouses 1,500,000 cubic feet of cold storage and freezing space, eight boilers, each of 75 horse power, are used in the smaller building alone.

The engines, compressors, and all parts of the machinery are in duplicate, so that if one set is disabled the other set of machinery may be started and the requisite temperature throughout the building steadily maintained. Whatever method used, the effect aimed at is the reverse of steam heating, that is to grasp and carry heat out of the rooms which it is desired to refrigerate. The brine which is produced by the ammoniacal gas process, and conveyed throughout the building in main pipes and smaller coils, leaves the manufacturing room in the basement at zero and returns from the circuit only five degrees higher. All this apparatus is especially constructed; buildings cost money, and at the present time more than $4,000,000 are invested in cold storage in New York alone.

The first floor of these great buildings is usually occupied by offices and

open space necessary for receiving and discharging goods, and the storage floors above are reached by heavy freight elevators. Passing through a small anteroom on leaving the elevator, the "bulkhead," or thick wall, which is air-spaced and padded so as to be nearly as possible a non-conductor of heat, is reached. The heavy door swings open, and a change of 50 degrees to 70 degrees is realized in a second of time. The purity of the atmosphere and the uniform temperature of each room or "box" are evident.

Tiers of goods extend to the ceiling, closely packed along immense floor spaces, or in smaller lots in separated rooms. To the visitor, who, as well as the guide, is protected with heavy wraps, the long stretches of pipes and rafters covered with frost crystals glittering in the electric light present a strange and beautiful spectacle. Poultry, meats, fish, butter and eggs are stored in largest quantity, and actual experiments show that these usually perishable goods can be held in cold storage almost indefinitely, and meat and fish frozen and kept for five years have come out in good, marketable condition.

By this preservative process a glut is prevented in periods of too plentiful supply, the season for perishable goods is lengthened to extend the year through, and prices are equalized, to the profit of both producer and consumer. For example, yearling turkeys, which last February were stored and frozen, and since kept in a dry air of 10 to 15 degrees, now bring in the markets three cents a pound more than the best spring turkeys. But even in this favoring market there is not much profit to the merchant, since a cent per pound is charged for the cold storage of poultry a month, and the higher rate of half a cent a pound each month for freezing. The prices charged for storage are, however, nearly 50 per cent. lower than they were ten, or even five years ago.

The artificial low temperatures, besides their uses in arresting the decay and retarding the maturity of fruits and vegetables, are applied to horticulture. Nursery stock has been kept in a cool temperature in good condition for three years, with the roots ready for growing when taken out. Hardy plants which are intended for forcing are often frozen after they are lifted, so as to give them their needed experience of a winter, after which they will push forward with energy. Imported pips of lily of the valley are largely held in cold storage, not only to preserve them, but because they start more quickly and strongly after having been frozen. Bermuda lily bulbs and other stock of this sort are also treated successfully in this way.

THE BEN DAVIS apple will come up as a competitor for the first place in the commercial orchard, notwithstanding all that is said against its quality. After all, it is about as good as the Baldwin in quality, and in productiveness of late years it is far in advance. Certainly in the South and West it takes the lead of all apples for commercial purposes, and sells at above the average price of winter stock in the Chicago market.

GOOSEBERRIES FOR PROFIT.

I THINK it is a fact that will not be questioned by any of your readers at all acquainted with our local fruit markets, that the supply of gooseberries is by no means equal to the demand; and that for those who can command a suitable soil and location, a sure and liberal profit can be realized, at a very moderate outlay of money, time and labor, by their cultivation.

The soil best suited to gooseberry growing has been found to be thoroughly drained, rich, and deeply-worked clay loam. These qualities of soil are imperative, as the plant is very impatient either of excessive dryness or heat. This is the only cause why success with it is at all uncertain. Therefore, with a moderate amount of protection from dryness and heat, the success of gooseberry culture may be looked upon as assured.

To secure these conditions, location must be skilfully used. The plants should be two years old, strong and well rooted, and, if carefully planted, their after growth will be rapid. The ground should be well prepared and marked off in lines four feet apart each way. Thus planting at the intersection of each line makes 2,725 plants to the acre, and will give satisfaction to the workers and pickers, and form a fine plantation after the first year's growth. The ground must be kept stirred by means of a one-horse cultivator, between the rows both ways, and not a weed allowed to be seen. Thus treated, the young bushes make extraordinary growth of wood and the set of fruit buds will be astonishing, repaying all the care bestowed on them. Of course in gooseberry growing, as in every other kind of fruit culture, if one would wish to reap the highest results, increasing vigilance and constant application must be certainly and freely given.

The annual pruning consists of shortening the summer's growth to a moderate extent, and thinning out the crowding shoots. This operation is best done (though very often neglected) in the early summer, as the growth of wood and fruit buds, on that which is left, will be so much better and more encouraging to the grower. After the wood has borne fruit for three or four years, and becomes somewhat old and feeble, cut it entirely out, and encourage young growth in its place. This renewing is very important in all pruning for fruitfulness. I have known a gooseberry plantation to remain profitable for twenty years and over, by proper attention to pruning and cultivation, but at the same time I am no advocate for this kind of thing; as I believe the best results come from young and vigorous plants, as in other fruits, and would advise changing the plantation after ten years' service, as young plants are produced so cheaply, that there is no economy in running a plantation after its prime is passed.

The ordinary enemies of the gooseberry are insects, mildews and blights. The most common insects are the caterpillar of the gooseberry sawfly (*Nematus*

ventricosus) and what is commonly known as the gooseberry worm (*Tempelia grossularia*). The first of these insects is hatched early in May, and so numerous do they become that they will completely defoliate an entire plantation, unless given an application of white hellebore, which will effectually stop their ravages and save the crop. This insect is not nearly so abundant or destructive as formerly. The gooseberry worm mentioned was also a threatening scourge, but its numbers are less and it may disappear from our gooseberry bushes altogether. After hatching, the worm eats its way to the inside of the berry and devours its contents, then immediately joins itself to another berry, enters and devours it also, and so continues. No remedy is known for this insect aside from hand-picking.

Occasionally plantations are attacked with a form of mildew, destroying the the fruit and rendering the bushes unprofitable and worthless. In my opinion, the cause of these diseases is atmospheric, and the remedies, to forbear planting varieties that are subject to such parasitic growths. Happily several varieties have been introduced within the past few years that are seldom, if ever, attacked by this mildew.

In conclusion, I may state that our standard varieties of gooseberries are limited to three or four, as a variety must be at once hardy to stand our climate, free from mildew, a good grower, and an abundant bearer, with fruit of first-class quality; these points are fully developed in Industry, Smith's Improved, Downing and Houghton's Seedling.—Ohio Farmer.

Early Tomatoes.—The experiments with tomatoes at the Maine station are reported by W. M. Munson (B. 9) as emphasizing the value of setting tomato plants as early in the spring as possible. Plants handled in pots previous to setting in the field are more vigorous and productive than those not so handled. This fact is of much importance to the market gardener, who wishes hardy plants which give large returns. The individual variation of plants of any one variety is often so marked as to obscure the effects of different methods of culture, and to prevent the forming of reliable conclusions from one season's crop. The productiveness of any given variety may be largely increased by crossing with some of the smaller, less valuable sorts. But the new variety will often quickly deteriorate, and the increased productiveness be wholly lost in a few years, even under good culture. Seeds from plants grown under the best house culture may give the best results. In the crosses made, the combining of the Lorillard-Currant hybrid with Lorillard, the size was doubled and the quality much improved, but the number of fruits was lessened. The most promising novelties were the Burpee's Climax, the Maule's Earliest, and Brinton's Best. In the cool climate of Maine, Ponderosa, Buckeye, State, Royal Red and Stone were too late; Lemon Blush lacked its distinguishing characteristic, and Terra Cotta was of inferior quality.—American Agriculturist

TOMATO CULTURE.

CHAPTER I.

SELECTING AND SAVING SEED AND ITS VITALITY.

The first thing that is wanted for growing a fine crop of tomatoes is *good seed*, saved in good condition.

In selecting tomatoes for seed, observe carefully the following points :—

1st. Select the earliest fruit.

2nd. Select the largest fruit.

3rd. Select the smoothest and best shaped specimens. With reference to shape, I would say that for market purposes a round or globular shape is not to be desired. The reason being that when carried or shipped to a distant market, their round shape causes their weight to be concentrated on a very small surface, and consequently causes them to become too bruised and cracked. I consider the best shape is a tomato nearly flat at the stem end, smooth and moderately full at the blossom end, and in general nearly oval.

4th. Select fruit from healthy, productive vines. By selecting from very fruitful vines for a number of seasons you will largely increase the productiveness of the variety.

5th. Do not pick the fruit until very ripe. The fruit should remain on the vines five or six days after all the green has disappeared.

VITALITY OF THE SEED.

The vitality of tomato seed has by most horticultural writers been estimated to last three or four years. If the seed is well saved as directed, and kept from damp air, it will be found to germinate satisfactorily after seven or eight years. I once grew good plants from seed ten years old. Some of the same lot of seed was tried the eleventh year, but failed to grow. I am quite sure that, even when seed is carefully selected, still where the same variety has been grown a number of years in the same location and on the same soil, it deteriorates, or, to use a common phrase, runs out. I have been in the habit for years, when I have obtained a good new variety, suitable for my soil and adapted to my wants for market and shipping purposes, to keep selected seed for seven or eight years, so that, instead of having seed that had grown seven or eight crops, I had seed that had produced only one crop from the original stock. Seed can then be saved again and kept the same length of time and so on. The variety may thus be kept a life time with little or no deterioration. Just here let me say that as far as my experience and observation go, I have been led to believe that seed five or six years of age produces plants that have a tendency to grow less vine, and to fruit somewhat more freely than seed that is fresh.

HOW TO SAVE THE SEED.

With a very sharp knife cut the tomato into halves through the centre between the stem and blossom ends. Then take the halves in your hand so as not to cover the cut surface, and squeeze the seed out into a tub or barrel. Set the seed away in a warm place until fermentation takes place. It will ferment in from twenty-four to forty-eight hours, according to the state of the atmosphere and degree of heat there may be during the time. After fermentation commences it should stand from five to ten hours, until the strings and pulp separate freely from the seed. Be careful not to let it stand too long, or the seed will sprout and be useless. To test it, put a little of the seed into a dish, and add water and wash it, if the seed separates readily from the pulp, and will sink to the bottom, it is ready to clean.

To clean the seed, add about one-half water, and then stir vigorously for two or three minutes Let it stand until the seed sinks to the bottom, then pour off the water very slowly and as much as possible without wasting any of the seed ; add more water and repeat the washing process until the seed has been entirely freed from the pulp. Then transfer the seed to a fine wire seive, and let it drain a few minutes. Then squeeze it into balls with your hands until it is as dry as you can get it. Spread it thinly on shutters or tables, and set it in the sun ; out of the reach of winds which might blow it away when it becomes dry. As soon as thoroughly dry, store away out of the reach of mice or insects. If there is considerable quantity of it put it in an open box in a dry room for a week or two, and stir it up with your hand every day or two to prevent it from heating. Be sure and label the seed very plainly, and enter also the day of month and year when it was saved.

CHAPTER II.

SOWING SEED AND RAISING PLANTS.

To raise early, strong plants, the best place is a greenhouse heated with hot water. The best size is a house 12 feet wide and the length necessary to grow the quantity of plants required. The passage in the centre should be two feet wide : the benches should be made so as to hold 8 inches of very rich soil. Two four-inch hot water pipes under each bench, with boiler large enough to keep a heat of 70 degrees in the coldest weather, will be required.

It is not my intention to describe in this work different modes of building and heating hothouses for plant raising, but to mention briefly those conditions which I have found best adapted for this purpose.

The soil should be very rich and mellow, and contain about one fifth part of medium fine sand. The first sowing should be made the last week in February or first of March in this part of Canada. If plenty of heat can be

obtained whenever wanted, the first of March will be soon enough It should be borne in mind that plants grown in a heat of 70° at night, which is increased in the daytime to 80° or 90°, will make more growth in a week than plants kept in an average temperature of 50° will make in four weeks, and the plants, if given plenty of room, will be far more vigorous and healthy. Some growers make a practice of keeping the plants in a temperature of from 40° to 50°, in order to harden them before setting them out where they are to fruit. But it should be borne in mind that a tomato plant cannot be hardened so as to improve it in the same way as other plants may. What it needs is a high temperature all the time. Half-hardy plants, such as cabbage, cauliflower, celery, etc., can and should be hardened off in a moderately low temperature. But the tomato being a semi-tropical plant, can not be kept in a low temperature without sustaining injury. They catch cold and become sickly and stunted.

Seed may also be sown in a hot-bed when a greenhouse accommodation is not available, but in this event it should not be sown so early—the first of April will be soon enough. The bed should be got into a heat of 70° or 80° before sowing the seed. Great care should be taken to keep up the heat of the bed, when fermentation begins to cease, by banking the outside of the bed with hot manure.

Care should be taken to air the plants so as not to chill them and, at the same time, to air them sufficiently to prevent them from being drawn up and becoming long and spindling. As soon as the heat ceases they should be transplanted into another hot bed with good bottom heat, setting them six or eight inches apart each way according to the size of the plants.

SOWING SEED.

As the growing of good plants is absolutely indispensable in order to insure a good crop of tomatoes, I shall be particular to describe the process in detail. Seed should be sown in drills about one foot apart and three-fourths of an inch deep and quite thin. Press the earth down level and quite firmly. As soon as the plants are up and show the first rough leaf, thin them out so they will stand at least two inches apart The plants should be grown rapidly. As they grow spread them out carefully with the hands, one to the right and the next one to the left ; spread them a little every day until they fill the space between the rows.

I am aware that most growers will say that in following the above directions there is a great waste of room, and that four times as many plants can be grown just as well as not on the same area. And so there can. Even six times as many plants can be grown on the same space. If you wish to transplant them when small, say about three or four inches high, such plants will be well enough and be large enough to prick into small boxes for market, or they may be pricked out in other beds and do well.

The question then arises, why give so much room ? In reply I would say

that, from long experience, I am convinced that every time a tomato plant is transplanted it loses to some extent its productiveness. Most of my readers will have observed that where plants spring up from self-sown seed a single plant in a place, if kept hoed and clean, they are, as a rule, always more productive than those that have been transplanted several times. But the crop will be late in ripening and consequently will be unprofitable.

My object, therefore, in advocating plenty of room is to instruct how to grow large, early plants with but few removals, and at the same time to remove them in such a manner as to check the plants but very little. When the plants have plenty of room they can be left in the seed bed till they are stocky and old enough for the wood to have become hardened, then they can be transplanted with very little check. The directions for the second and third shiftings are such as will scarcely check them at all.

As soon as the plants are up, care must be taken to keep an even degree of heat from the bottom, and, at the same time, air from the top when required. Especial care should be taken on bright, sunny days lest too much heat is allowed to accumulate next the glass, else the plants will be overdrawn and thereby injured. Grow the plants as large and strong as possible until the leaves touch each other. Then no time must be lost in shifting at once. Take a trowel and dig them so as to break the roots as little as possible. Now mark out the soil on the benches in rows, twelve inches apart, and dibble them into the ground, setting them up to the seed leaf. Set the plants seven inches apart in the row. Let them grow until the leaves touch again, and they are ready for the second removal. This time they are to be boxed off.

(To be continued)

St. Mary's. S. H. MITCHELL.

Loudon's Rules of Horticulture. — 1. Perform every operation in the proper season and in the best manner.

2. Complete every operation consecutively.

3. Never, if possible, perform one operation in such a manner as to render another necessary.

4. When called off from any operation, leave your work and tools in an orderly manner.

5. In leaving off work make a temporary finish, and clean your tools and carry them to the tool-house.

6. Never do that in the garden or hot-houses which can be equally well done in the reserve ground or in the back sheds.

7. Never pass a weed or an insect without pulling it up or taking it off, unless time forbids.

8. In gathering a crop, take away the useless as well as the useful parts.

9. Let no plant ripen seeds unless they are wanted for some purpose, useful or ornamental, and remove all parts which are in a state of decay.

THE COMMONEST FAULTS IN HOME GROUNDS.

THE one greatest fault with ornamental or landscape grounds, it seems to me, is the lack of open areas of sward. The selection of plants may be ever so good, and the location of the buildings and even of the walks may be perfect, and yet the whole effect may be ruined by purposeless arrangement of planting. This fault is particularly noticeable in home grounds. Most yards are mere nurseries,—a scattered and meaningless bit of planting. I am constantly more and more impressed that the first and most important lesson to be taught by the landscape gardener is essentially this: "Avoid scattered planting. Leave broad, open spaces of greensward. The garden should be a picture, but this can be attained only with broad, restful spaces." If a person once perceives this truth, all other essentials of landscape adornment fol ow easily and naturally. This is the core of landscape gardening.

My neighbor has a front lawn forty feet deep and one hundred feet wide. It contains about thirty bushes and trees scattered equi distantly over the entire area. The result is that people admire the individual bushes, but never the yard as a whole. There is no pleasing or continuous effect of the place as a whole, no one bit of sward larger or finer than another, no variety, no feeliug of seclusion, no picture. Yet these same bushes, if grouped about the sides of the lawn, would have furnished the place with perennial attractions.

Another common fault in the planting of home grounds is the feeling that shrubs are desirable in proportion as they have beautiful flowers. But flowers are temporary at best, while the bush itself should be a source of pleasure throughout the twelve months. Roses, especially, are apt to be used too freely in conspicuous places. There are few roses which make attractive bushes, and the foliage is greatly subject to attacks of insects and fungi. While I should not discourage the planting of roses, I always call attention to the fact that their effects are of short duration, and that, therefore, the plants should be considered a part of the flower garden, rather than a part of a lawn or landscape garden. Plant them well at the rear or at one side, and where the bushes themselves, when flowers are passed, shall not be too conspicuous.

Much is said and written against the habit of planting in rows, but instruction should really begin farther back. The planter should be made to feel that, first of all, he needs open spaces, and then that the best effects are not obtained by a mere flower garden. With these two principles well understood, most other matters will solve themselves.—Landscape Architect.

WINTER PRUNING IN THE ORCHARD.

THE pruning of orchards, aside from any stated time, presents many perplexing problems, for the reason that no conclusions have been reached as yet, or at least recognized, sufficient for the establishment of a perfect science of such practical importance that its application may be easily understood and followed. Although the art of pruning has been conducted from time immemorial, no set rule has as yet been evolved and adopted, and perhaps never will, as to how much or how little, when and how, our fruits should be properly pruned. The clearest solution is the application of judgment acquired by practice, or the observance and enforcing of a few general principles which are attended with the best results. If in the pruning of any plant these principles are wrongly applied, it resolves itself into one of the most injurious operations that can take place, but if, on the other hand, they are well directed, it becomes one of the most useful operations for the mutual benefit of the plant and pruner. The winter pruning of fruit trees tends to encourage the growth of wood and the building up of the tree generally, while summer pruning, usually carried on in the month of June, when the leaves are two-thirds formed, assists greatly in the production of fruit. So at this season of the year we are confronted with the often repeated query: "Is the winter pruning of apples and other fruits advisable, and under what conditions should it be done; when and how?

In pruning the apple in winter, warm days should be selected during the latter part of the season, after the severity of the young winter has passed away, especially in climates where the thermometer is liable to register several degrees below zero. The exposure of cut surfaces may cause it to become injured, and would fail to heal over as readily or as perfectly. Large limbs in orchards that have been neglected are best removed during the warm winter days, enforcing judgment so as not to make too large a removal, as it is liable to bring about too great a shock to the vitality of the tree, and should be practiced only when necessity calls for it. This removal of large limbs is delicate work, and may be avoided in the orchard by inspecting the trees every winter during their young days, removing cross limbs or overgrown abundant shoots. These shoots occur generally where orchards are pruned the following season, and should be removed by breaking off. In pruning, remove the limbs or branches close to the trunk or stem, making the surface smooth with a knife, cutting away ragged edges of bark to prevent liability to decay.

The wound should then be treated with a composition material, serving the purpose of preserving the wood, excluding the air, preventing injury to cell structure and cracking of the surface of the wound, and assisting the new bark in forming over the cut made. Any surface of an inch in diameter should be

treated. An efficient composition is alcohol and gum shellac, mixed to form the consistency of paint, applied with a brush. Common white lead paint is equally as good. Coal tar may also be used. Winter pruning of enfeebled trees will give them a stimulating vigor, if done judiciously, causing the cell development to become larger by increasing the nourishment in a less number of branches. If young trees are pruned in the early part of the winter, especially in a north latitude, the ends of the shoots will die back, and if wounds are exposed, will not heal over as readily as if treated later on in the season. The best time is the latter part of February and the first half of March.

The pear is treated the same as is the apple. Winter pruning is of great value, as the wounds heal over perfectly.

Where it is necessary to prune a plum, it should be done in the middle of the winter season, as it is dangerous and very injurious to prune after the sap has started in the spring. The culling or heading back of the shoots which have made an over-luxuriant growth during the season, should take place usually in February, about the time peaches are being cut back. These shoots should be pruned back from one-third to one-half of their growth, making the cut as small as possible, just above a bun, not too close or too far above, bearing in mind that leaving a bud on the inside tends to produce a straight one, while the outside bud more of a horizontal growth.

The cherry should be pruned but little, pinching and shortening-in being practiced to produce a compact, spreading top. If pruned in winter, it is apt to form gum in the wound and cause decay.

In the vineyards in the north, grapevines should all be pruned and laid down by this time. Those who have only a few vines in the garden, who have not done this, should see to it at once, and prune severely, as the fruit has borne the season's growth and should be pruned back to at least three lateral buds, from which new bearing vines will form. If left on the trellis over winter, the evaporation will weaken the vines, as winter circulation is very great. In conclusion, if winter pruning is judiciously carried on, paying results may be looked for.—PROF. E. E. FAVILLE, in Farmers' Advocate.

The Brilliant Grape.—The following from the report of the pomologist of the Department of Agriculture tells the whole story:—"This is a seedling originated by Prof. T. V. Munson, of Denison, Texas. It is the result of a carefully made cross between Lindley and Delaware, effected in 1883. It has been tested by a few of the best grape-growers in the country, and proves hardy in vine. The growth is quite vigorous, and, so far as can be judged, it bears abundantly. The cluster is about the size and shape of the Concord, being compact and slightly shouldered. The berry is large and hangs well to the stem. The color is red, nearly resembling the Catawba. In flavor it is about equal to the Delaware, being delicate, yet rich and aromatic. The pulp is very tender and the seeds seldom exceed two or three. The skin is thin, yet tough enough to ship well.

FORCING VEGETABLES.

The hot beds are prepared in November. The site should be one well drained, and if it has a gentle slope to the south or south-east it will be better. A tight board fence, six and one-half feet high, and slanting one foot toward the north, should be built along the north side of the range. The land south of the fence should be enriched with fine manure, or chemical fertilizer; harrowed until thoroughly fine, and so graded that the surface shall slope a little from the fence, but be nearly level from east to west. The plank for the sides should be of pine, spruce or cypress; that for the north side 2 x 12 inches, and for the south, 2 x 10 inches. The former is set two feet from the fence, and held in place by stakes driven into the ground outside the plank, then nailed to them. The plank on the south side must be set exactly six feet, outside measure, from that on the north side, and so adjusted as to be about four or five inches lower than the other; that is sufficient for drainage. Braces will be needed every ten feet to keep the planks from springing. Earth should be banked against the outside of the plank to within five inches of the top, and before the ground freezes the whole should be covered with straw, coarse hay or coarse manure, to prevent freezing until the bed is required for use. When that time comes the covering is removed, and the soil thrown out to the depth necessary to accommodate the required "heat" (hot dung) and soil, and leave room for the plants under the glass. The "heat" varies from six to fourteen inches deep, and the loam from six to eight inches, according to crop and season.

The greenhouses now devoted to these purposes are built, some of them, fifty feet wide and four hundred feet long; the roofs have a pitch of twenty to twenty-five degrees, and the ridge is twenty feet above the beds. The materials now preferred for roofs are cypress wood sash-bars, supported by iron-pipe posts, and covered with 18 x 24 inch plates of glass.

The vegetables forced for market are the following, which are named in the order of importance: Lettuce, cucumbers, radishes, dandelions, beets and beet greens, parsley, mint, and cress. Mushrooms are also largely forced, but not under glass: dark pits being used for this purpose. Lettuce is by far most largely grown and used. Most establishments produce two or three crops each winter; followed by a crop of cucumbers. The immensely increased annual demand has fully equalled the supply until this season, when the general depression of business and consequent decrease of incomes among those who usually have bought these delicacies, together with the unusually good supply from Southern growers, has forced the prices below the cost of production. But this is a temporary condition: already the reaction has set in, and probably the near future will bring an equivalent return. Prices may not again average as high as in the past, and it is not desirable that they should. Nothing contributes so surely to the health of a family as a liberal use of fresh-grown salads.

and they should be sold at prices within the reach of people of moderate incomes; the increased use of them should be regarded as a sign of appreciation of the healthful effects of the free use of fresh vegetables. Forcing-houses for growing vegetables require constant attention, day and night, seven days in a week during the season. A little neglect will convert a valuable crop into a sickening mass of frozen or scorched rubbish; but for those who love to watch and care for growing plants, there is an indescribable fascination in this work when all nature outside is locked up in snow and ice.

But there are many difficulties to be met and overcome. In our fickle climate, the maintenance of a suitable temperature and degree of moisture for the proper growth of each class of plants requires constant watchfulness. A sudden fall in the outside temperature of 20° or 30° during the night, or an equally great increase during the day, may work irreparable disaster; and lesser changes also, if not observed, and needed attention given, will produce harmful effects. The treatment of insect pests and fungous diseases is still but imperfectly understood by many culturists. The aphis is a very destructive pest in greenhouses and hot-beds. It thrives best in a rather warm temperature, especially if fed upon lettuce and cucumber plants. Smoking with tobacco, frequently but carefully, is a good remedy, and fine tobacco is the best form to use. The various mildews and rots of lettuce and cucumber plants are but little understood pests. For preventives—the surest treatment—begin by cleansing the vacant greenhouse with a strong sulphur smoke. Then provide clean plants, and after setting them, keep them growing vigorously in a congenial heat and moisture. Plants thus conditioned are far less liable to suffer from either insects or the fungous diseases than are the stunted, weak or anywise unhealthy stock.

The first crop of lettuce or cucumbers grown in a new greenhouse, in fresh soil, is generally the best it ever produces. Succeeding crops are more liable to suffer from insects or diseases. This fact suggests the importance of rotating crops where it is possible to do so, in order to avoid the spores of fungi, which rapidly accumulate in the soil and the surroundings where the same kind of crops are grown in succession. This is difficult to accomplish, but may be worth the cost.—W. D. PHILBRICK, before Mass. Hort. Society.

Clematis Jackmanii and all others of its type require to be planted in a deep, well-enriched soil, and to be manured freely every season. As they flower on the young, vigorous shoots, they should be trimmed back before growth commences in the spring. In November they should be given a good mulch of coarse, littery manure, and this should be well worked into the soil in the spring. Thus treated, they will commence to bloom in July, and will continue to flower as long as the plants have strength to throw out lateral shoots.—Popular Gardening.

A HINT TO HORTICULTURAL AND AGRICULTURAL SOCIETIES.

TO those who have given the subject due consideration, it seems incredible that the Horticultural Journal and the Annual Report of this Association, when it contains so much useful information to fruit growers, whether they be villagers having their quarter-acre lot, or orchardists having large farms, should have such a limited circulation. The membership, which is but little over 2,000, should and may be increased in a few years to ten times that number.

Upon a careful survey of the subject for the purpose of finding some way of materially increasing our membership, it has been found that the means by which it may be accomplished is already provided in the Agriculture and Arts Act.

The provisions of the Act relating to this subject are upon such broad and liberal principles that the reader of the Act may well be astonished that every township and horticultural society in the Province has not long ago become affiliated with this Association. Sections 46, 47 and 48 provide for the organization and maintenance of township and horticultural societies in a liberal manner. It is quite evident, however, that the officers and members of these societies have generally given no attention to the provisions of the Act relating to the several purposes to which the money may be applied, and I here copy in full Section 37, so as to give its provisions prominence :

"37—(1) The objects of the said societies and of the township societies in connection therewith, shall be to encourage improvement in agriculture, horticulture, manufacture and the useful arts."

"(*a*) By holding meetings for discussion and for hearing lectures on subjects connected with the theory and practice of improved husbandry or other industrial processes."

"(*b*) By promoting the circulation of agricultural, horticultural and mechanical periodicals."

"(*c*) By importing and otherwise procuring seeds, plants and animals of new and valuable kinds."

"(*d*) By offering prizes for essays on questions of scientific inquiry relating to agriculture, horticulture, manufacture and the useful arts."

"(*e*) By awarding premiums for excellence in the raising or introduction of stock, the invention or improvement of agricultural or horticultural implements

and machinery, the production of grain and of all kinds of vegetables, plants, flowers and fruits, and generally for excellence in any agricultural or horticultural production or operation, article of manufacture or work of art."

"(2) The objects of horticultural societies shall be the same as those of district and township agricultural societies, but in relation to horticulture and arts only."

It is evident, therefore, that there are five ways in which the funds of these societies may be used. These may be summarized as follows, viz. :

1. By holding meetings for discussing and for hearing lectures on subjects connected with the objects of the society.

2. By promoting the circulation of agricultural and horticultural literature.

3. By importing and otherwise procuring new and valuable seeds, plants, etc.

4. By giving prizes for essays on subjects connected with the objects of the society.

5. By holding exhibitions and awarding premiums for things connected with agriculture, horticulture, etc.

The fifth and last sub-division—that permitting the holding of exhibitions—is the only one generally acted on, but it must be apparent that if the funds were expended as provided by either of the other sub-divisions, or partly under all of them, the expenditure would be as legal as under the fifth.

It is difficult to understand why towns and villages have not further availed themselves of the provisions of the Act and established horticultural societies in their midst, except on the supposition that the directors of such societies supposed they had of necessity to expend the funds in holding exhibitions, and in no other way, while they know that but little or no public good has resulted for many years from such local exhibitions, and this applies also to many of the township societies. Not to all ; some of them are yet doing good work.

There are, however, many other reasons why so little interest is taken in township and horticultural societies under the present prevailing system of management. It is well known that the labor and care of managing such exhibitions devolves mostly on the same persons from year to year in each society, and they must also expend much time every year in begging their fellow-citizens for their membership fees. Not a pleasant job at best, and this unpleasantness is greatly increased by the knowledge that but comparatively few of the members partake of the pecuniary benefits resulting from such exhibitions. Those who receive the prize money generally render the least assistance.

The suggestions offered as a remedy for this state of affairs are : That township and horticultural fairs or exhibitions—as a rule—should be given up and that the provisions of the Act be so administered that each and every member of such societies should receive equal advantage. And this can be

done by spending the societies' money as provided by any or all of the first four sub-divisions of sub-section 1 of section 37 of the Act. By referring to these sub-divisions and to sections 58 and 59 it will be seen that under intelligent management every member of such societies may also be a member of the Fruit Growers' Association, which will entitle him to the Horticultural Journal for one year, a bound copy of the report, and a share in its distribution of plants. He may also receive two or three dollars' worth of the choicest plants, bulbs, shrubs or trees procurable, all for the usual fee of one dollar, and the directors should still have funds on hand sufficient to defray the cost of holding two or three meetings each year for discussing local agricultural and horticultural matters.

If these suggestions are carried into effect, the Fruit Growers' Association of Ontario will very soon number 10,000 members, and who can estimate the benefits which would be derived by the circulation of so many thousands of copies of our publication amongst an interested agricultural population? At present the circulation of our journal is mostly confined to our towns and villages. The agricultural population—those who are most in need of the information sent out—are not yet reached.

When the agricultural population of that portion of Ontario embraced between the 44th and 45th degree of North latitude become fully aware of its possibilities for the production of fruit, and have proven by practical experience that in this belt there can be profitably the best winter apples on this continent, then the Province of Ontario will become known as the best home for the surplus Anglo-Saxon race on the face of this globe.

THE APPLE AS MEDICINE.

Mr. L. Foote replies to M. D., in Open Letters of November, but as our journal has no room for discussion of the merits of the medical profession, we simply give our readers an extract on the above subject, enclosed in his letter, which, we believe is true, at least to a large extent.

Dr. G. R. Searls, of Brooklyn, N. Y., thus discoursed on the apple as medicine :—"The apple is such common fruit that very few persons are familiar with its remarkably efficacious medical properties. Everybody ought to know the very best thing they can do is to eat an apple just before retiring for the night. Persons uninitiated in the mysteries of the fruit are liable to throw up their hands in horror at the visions of dyspepsia which such a suggestion may summon up, but no harm can come to even a delicate system by the eating of ripe and juicy apples just before going to bed. The apple is an excellent brain food, because it has more phosphoric acid in easily digestible shape than any other vegetable known. It excites the action of the liver, promotes sound and healthy sleep, and thoroughly disinfects the mouth. This is not all. The apple agglutinates the surplus acids of the stomach, helps the kidney secretions and prevents calculus growth, while it obviates indigestion and is one of the best preventives known of diseases of the throat. Everybody should be familiar with such knowledge."

A NEW PEST—THE SAN JOSE SCALE.

(Aspidiotus perniciosus, Comstock).

THE unexpected discovery, in the Eastern United States and British Columbia, of this scourge of the Pacific Coast orchards, makes it all important to draw the attention of Ontario fruit growers to the subject, so that they may become familiar with its appearance and be prepared to adopt active measures to eradicate it, should it, as it is more than probable, appear in our province.

In August, 1893, the first eastern specimens of the San José scale were brought to the notice of the United States Entomologist, and he at once took active measures to find out all that was to be learned concerning its distribution and injuries, with the object of stamping out such a formidable enemy. In April, 1894, Mr. Howard issued a circular under the caption "An Important Enemy to Fruit Trees," in which he gave a short history of the insect and the most approved remedies. He has been kind enough to lend the following illustration from that Bulletin, which will be of great service in giving an idea of the appearance of the insect.

The San José Scale was first brought to California, it is thought, from Chili, about 1870, and it was first noticed as injuriously abundant at San José in 1873, and called the San José Scale. "It does not seem to have been named scientifically until 1880, when Prof. Comstock described it in his annual report to the United States Department of Agriculture—he designated it *perniciosus*, because he considered it the most pernicious scale insect known in the country. It swarmed in countless numbers upon the trees in certain orchards, and infested all the deciduous fruits grown in California, except the apricot and Black Tartarian cherry. In the course of twelve years, the insect spread through all the fruit growing regions of California, through Oregon, and into the State of Washington. It is known as the worst insect pest of deciduous fruit trees on the Pacific coast, and has caused great pecuniary loss. Many crops of fruit have been ruined, and thousands of trees have been killed." (L. O. Howard, Circular 3.)

In 1892 the insect was found in New Mexico, on apple, pear, plum, peach, quince and rose. It had been brought into New Mexico upon young trees from California. Nearly all the other instances of infestation east of the Rocky Mountains can be traced to two nurseries in New Jersey, where the pest had been introduced in 1886 or 1887 on trees of the Japanese plum "Kelsey," which had been procured from the San José district in California. Idaho pear trees had also been frequently imported from California, which were most probably infested. In 1891 and 1892 several blocks of young apple trees were badly infested. It is on pear trees chiefly that this pernicious scale has been

distributed through the State of New Jersey. Prof. J. B. Smith says (Insect Life, VII., p. 166) : "The Idaho pear has been the most dangerous because it came infested whenever imported direct, and after it came in close order, Madame Von Siebold, Garber, Lawson, Seckel, Lawrence and Bartlett. Other varieties are also infested, but less frequently, and the scales do not do so well. Kieffers alone are absolutely exempt, and closely following comes the Leconte, which is rarely infested in the nursery, and never in the orchard, in my experience. One tree grafted with Lawson and Kieffer had the Lawson branch and fruit covered with scales, while the Kieffer branch was entirely free. Currants, black and red, became rapidly infested, and the scales were certainly distributed on these plants."

Mr. Howard says that this insect spreads rapidly for a scale insect, and is the most dangerous scale known. It is, too, inconspicuous, and would be overlooked by many. Specimens of infested apple boughs received from British Columbia were entirely incrusted with the scales so as to give them the appearance of having been dusted with ashes. Mr. Howard gives the following description of the scale in his circular above referred to : "The San José Scale belongs to the same group of scale insects—the Diaspinæ, or armoured scales—to which the Oyster-shell Bark-louse of the apple belongs. It differs from this species, and in fact from all other eastern species found upon deciduous fruit trees, in that the scale is perfectly round, or at most very slightly elongated or irregular. It is flat, pressed close to the bark, resembles the bark of the twigs in color, and when fully grown is about one eighth of an inch in diameter. At or near the middle of each scale is a small, round, slightly elongated, black point ; or this point may sometimes appear yellowish When occurring upon the bark of the twigs or leaves, in large numbers, the scales lie close to each other, frequently overlapping, and are at such times difficult to distinguish without a magnifying glass. The general appearance which they present is of a grayish, very slightly roughened scurfy deposit.

The natural rich reddish color of the limbs of the peach and apple is quite obscured when these trees are thickly infested, and they have then every appearance of being coated with lime or ashes. When the scales are crushed by scraping, a yellowish oily liquid will appear, resulting from the crushing of the soft yellow insect beneath the scales, and this will at once indicate to one who is not familiar with their appearance the existence of healthy living scales on the trees. During winter the insect is to be found in the half-grown or nearly full grown condition. The young begin to hatch and to crawl from under the female scales shortly after the trees leaf out, and from this time through the summer there is a constant succession of generations. The insect affects not only the young twigs and limbs, and with young trees, the entire plant, but is also found upon the leaves and upon the fruit. When abundant the fruit is destroyed. One of the most characteristic points in the appearance of the insect upon fruit, is the purple discoloration around the edge of each scale.

The above description will enable fruit growers to recognize this enemy, should they be unfortunate enough to get their orchards infested with it.

REMEDIES.

With regard to remedies, we have the advantage of all the experience of Californian experiments and the careful work of the Division of Entomology at Washington, as well as of Prof. J. B. Smith, of New Jersey, during the past year. There are three methods which have proved effective in fighting the San José Scale. In cases of severe attack it is recommended to cut down the infested trees and burn them. The other methods are, spraying with insecticidal washes, or fumigating the trees with poisonous gases. The insecticidal washes may be divided into summer washes, which can be applied while the trees are in leaf, and winter washes of a stronger nature, which would injure the foliage but will do no harm to the trees during the winter, when they are in a dormant condi-

FIG. 724.
SAN JOSÉ SCALE

FIG. 725.
(Part of infested branch, life.size.)

tion, and yet will have the effect of destroying the scale insect. Of the *summer washes*, the ordinary kerosene emulsion (Riley-Hubbard formula) and a resin wash [resin 20 lbs., caustic soda (70 per cent. strength) 5 lbs., fish oil 3 pints, water 100 gallons[were recommended by Mr. Howard, and used with success during the past summer. On peach trees, owing to the susceptibility of the foliage to injury, the stock kerosene emulsion was diluted with fifteen times its volume of water, instead of nine times, the usual strength advised for most other plants. It was found advisable to repeat the spraying at intervals of about a

week. The young scale insects were noticed on May 19th at Riverside, Md., and the females, viviparous in habit, gave birth to young for a full month. This was upon peach trees, and it was found that the resin wash killed the scales more quickly than the very diluted kerosene emulsion, and, as Mr. Howard points out, this rapidity of the work is important, since where a full-grown female is sprayed with kerosene emulsion, she may live for three or four days, during which time she may bring forth young; whereas, if sprayed with the resin wash, fewer young scales are produced. The resin wash, however, is readily carried off by the rains, while the kerosene is more resistant.

In Professor J. B., Smith's investigations in Pennsylvania, it is recorded (Insect Life, VII, p. 159) that, "he has visited the locality at Atglen, Pa., and found that in an orchard of over 7,000 trees, all of certain varieties, and a few of others, were infested by the scale. As a result of his recommendations, kerosene emulsion has been applied three times to most of the trees at intervals of ten days, up to the first week in June. The treatment has been absolutely successful."

For *winter washes* the kerosene emulsion and resin washes may be made stonger. The stock kerosene emulsion has been used diluted with only four and a half parts of water, and for the resin wash the same ingredients were used in the following proportions: Resin, 30 lbs; caustic soda, 9 lbs.; fish oil, 4½ pints; water, 100 gallons.

"The most favored winter remedy in California, however, is the lime, salt, and sulphur mixture. This consists of unslacked lime, 10 lbs.; sulphur, 5 lbs.; stock salt, 5 lbs.; water to make 15 gallons. This wash will do great damage to the trees if applied during the growing season, *and should be used only in winter*. All the sulphur and half the lime are placed in a kettle and 8½ gallons of water added, after which the contents of the kettle are boiled briskly for about an hour. The solution, which at first is yellow from the sulphur, will turn very dark brown, assuming more or less of a reddish tint, and will finally change from a thick batter to a thoroughly liquid condition, the products being ordinary sulphide of lime. All the salt is added to the remaining 5 pounds of lime and the latter slaked, after which the slacked lime and salt are added to the sulphide of lime already obtained, the whole being then diluted with water to make 15 gallons. This should be strained before application, as it does not form a perfect liquid solution on account of the considerable quantity of undissolved lime, which will soon sink to the bottom unless the solution is constantly stirred while being sprayed."

The third method of fighting scale insects is known as the Gas Treatment. This has been extensively used in California but is an expensive operation, and the materials necessary are very poisonous and dangerous to have about. It consists, briefly, of covering the trees to be treated with an air-tight tent and then filling the tent with the poisonous fumes of hydrocanic acid gas, which is generated by placing 1 oz. of cyanide of potassium, 1 fluid oz. of sulphuric acid, and

3 fluid ozs. of water in an earthenware vessel beneath the tent. The gas is very light and rises to the top of the tent, and if this be kept on the tree for half an hour, every scale will be destroyed. The quantity of ingredients given above is sufficient for a tent enclosing 150 cubic feet.

What is wanted, however, is to know *the best remedy*, and it is satisfactory to learn that on the whole the standard remedy for scale insects, kerosene emulsion, is the best. In summing up his experience of the year, Mr. Howard says as follows; "Remedial work against this insect is onerous, but our experience has shown that three sprayings at intervals of ten days during the latter part of May and June, will practically destroy the insect, whether the spraying be conducted with very considerably diluted kerosene emulsion or with a resin wash, while during the winter a single application of either of the three winter washes will greatly reduce the numbers of the insect. Among the winter washes our experience leads us to give the preference to strong kerosene emulsion; next to the winter resin wash; and finally, to the lime, salt, and sulphur mixture.

The kerosene emulsion is now well-known to most Canadian fruit growers; but it may be well to give it here:

Kerosene (coal oil)	2 gallons.
Common soap or whale oil soap	½ pound.
Water	1 gallon.

Cut up the soap and boil the water till all is dissolved, then add it boiling hot to the coal oil; churn the whole briskly for five minutes with a syringe or force pump. When the emulsion is perfect, it will adhere without oiliness to the surface of glass, and when cooling forms a jelly-like mass, which can be kept indefinitely if stored in a cool place and covered from dust.

When required for use, for a summer wash, dilute one part of the stock made as above with nine or fifteen parts of water. To make the stock dissolve easily, take first three parts of hot water to one of the emulsion, and then, when all is thoroughly mixed, add sufficient cold water to make the nine or fifteen parts required; for a winter wash mix with four and a half or nine parts of water.—J. FLETCHER, in Report Entomological Society.

THE NEW HORTICULTURAL SOCIETY at Woodstock promises to be a very large and successful organization. On the evening of the 23rd of January, Mr. Thos. Beall and the Secretary addressed a special meeting of citizens called together by the President of the Board of Trade, Mr. D. W. Karn. The work of our Association was clearly presented, showing the various departments of work we have in hand: as Spraying, Experiments, Prevention of Fraudulent Fruit Packing, Study of Fertilization of Flowers, of Fungi and Insects, etc. Then Mr. Beall placed before them the best method of conducting a Horticultural Society, in order to give the most good to the largest number; after which it was decided to form a Society at once.

A BUDGET OF QUESTIONS.

The following are some replies kindly made by Mr. John Craig, of the Central Experimental Farm. Ottawa, to a budget of questions sent in for consideration at Orillia, but not taken up for want of time:

Query. (1) *What kinds of tomatoes are most liable to rot?*
(2) *What is the best preventive?*

Answer (1) As a rule, wrinkled tomatoes crack and rot more than the smooth, round kinds; rarely do the small egg and plum tomatoes show any disposition to rot. Yet this matter of rotting is less a characteristic of varieties than it is systems of training. That is to say, the same variety may not show the same amount of rot every year. Prof Bailey cites an instance of the same variety from different sources, showing marked differences in amount of rot, and the differences seem more accidental than varietal.

(2) Tomato rot is due to a fungus (*Macrosporium tomato*). This fungus can be prevented by spraying the plants with Bordeaux mixture on its first appearance. Careful watch over the plants should be maintained so that an early application can be made. One or two later sprayings may be necessary. Methods of training the plants undoubtedly influence the development of the disease to a considerable extent. In our experiments we have found that vines which are staked, or even hilled up, have less rotten fruit, and ripen their fruit earlier than plants which are not so treated; but it is yet an open question whether or not the operation pays.

(3) *Irrigation?*

(3) I had nothing new to offer on this line; but in suggesting the subject it was done with the object of hearing it discussed by the members present, and possibly by some who have tried it during the past very dry season.

There is no doubt that almost any system of irrigation would have richly repaid many fruit growers in the Niagara district during the past season, even to the extent of spending a considerable amount of money in hauling water upon their orchards. I had the opportunity of seeing the injury sustained, principally by the dwarf pear orchards, in that vicinity, and this damage is not easily estimated, and certainly is not measured by the loss of fruit this year. A striking object lesson of the benefits of irrigation, even after the most primitive methods, came under my notice while noting the results of spraying experiments being carried on at Grimsby. Two orchards of dwarf Duchess pear, lying almost alongside and on somewhat similar soils, about the 1st August showed unmistakable signs of injury from lack of moisture. The owner of one decided to try the benefit of applying a few pailfuls of water to the ground about the base of each tree. The water was hauled by horse power, with a barrel on a stoneboat. Four or five pails of water were given to each tree, covering about half of the

orchard; a week later another watering was given, this time the whole of the orchard being watered. On the 1st September the difference between these two orchards was most striking The unwatered one had lost at least one-third of its foliage and the remainder was in a very badly dried-up condition, while the fruit had only obtained about half its normal size, and was at that time soft and considerably shrivelled. In the case of the watered trees, while they lost some of their foliage, yet the fruit was much larger, was unshrivelled and quite firm. In the one case the crop was saved to the owner and the trees may be able to bear fruit next year. In the case of the unwatered orchard, I question whether the trees will make much growth next year, to say nothing of bearing fruit; and it is even probable that many will die.

A very interesting experiment in irrigating a peach orchard was made by Mr. Barnes, of St. Catharines, who has a large peach orchard situated along the bank of the Welland Canal and slopes towards that sheet of water gradually, in two directions. He purchased an engine, connected it with the canal by means of pipes and forced the water up the highest portion in his orchard. From this point it was distributed throughout by means of surface drains having a slope in two directions. By constructing a main channel along the highest elevation, and from this, running at right angles, laterals, the water was conducted in a manner which covered the whole orchard. When I examined the orchard about 1st September, I found the trees showing no ill effects from the drought, and the fruit ripening well. I think that Mr. Barnes would, on account of increased size and retarded maturity of his peaches, be more than repaid the amount of the initial cost of the purchase of the engine and other material.

In connection with this, it is always well to bear in mind that the next best thing to irrigation for supplying moisture to the soil is good cultivation. The principle involved in this statement has often been enunciated, viz., that by stirring up the soil frequently, and beginning to do this before a hard crust forms after a period of wet weather, a dry mulch or blanket is formed over the surface, which prevents the evaporation of moisture from below. This evaporation goes on most rapidly where the soil has been undisturbed and where air channels have been allowed to form.

(4) *Cold Storage Buildings?*

(4) I regret that I am not able to give anything just now on this subject which would be of service to the fruit growers. I have lately had a communication from Col. J. M. Rosse, of Orillia. He has patented a cooling house, or cold storage building, which seems to me has some commendable features. But the system being patented somewhat complicates matters in regard to giving the public the benefit of his mode of operation.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

GIVING PRIZES FOR LARGE COLLECTIONS of apples at fairs, was condemned by the meeting at Orillia, in the following resolution, moved by Mr. A. H. Pettit, and seconded by Mr. Thomas Beall, That in the opinion of this Association the offering of awards on large collections of varieties of apples at our exhibitions is not productive of profitable results, but in lieu thereof that prizes ought to be offered for the best collection of apples for export purposes.

PRUNING APPLE TREES.—This work may be done in the mild weather of winter, any time until the middle of April. After that it is perhaps best to wait till toward the end of Jnne, when the sap is in condition to repair the cuts, instead of oozing out. Wounds made during the winter may be left until the wood has dried, and then painted over, in order to protect it from the action of the air and the wet, until healed over.

At Maplehurst, we aim to favor the natural growth of the tree in pruning. To attempt to make a Spy grow like a Greening is foolish. The one will grow upright and pyramidal, the other will spread.

LOCAL FRUIT GROWERS' SOCIETIES are being formed in several places by Director Beall. The one at Lindsay and the one at Port Hope, formed by him, have much enthusiasm, and the members scarcely need be canvassed for, so great are the recognized benefits. Societies are also being formed at Niagara Falls South, Port Colborne, Grimsby, Woodstock and other places—under the provisions of the Agricultural and Arts Act for Horticultural Societies. These societies can only be formed in cities, towns and incorporated villages. We

shall be pleased to hear from any such place where a society might be formed. Information will be freely given, and Mr. Beall will visit the place and explain the whole scheme, if desired.

ORCHARD SPRAYERS.—Now that the advantages of spraying our orchards for fungi and insects are so clearly proven, there is no doubt that Ontario fruit growers will be very active during the coming season in treating their orchards. The great question before us now is the most economical and effective spraying apparatus. Some of our more enterprising fruit growers have been experimenting with horse-power machines which cost from $50 to $90 each, but the result of our experience is that these are not so useful for the orchard as for the vineyard and other plantations of low-growing plants.

For an extensive orchard the best spraying outfit is probably a large tank or cask, holding one or two hundred gallons of water placed in a lumbre-wagon. This tank is made fast to the wagon and a handforce-pump is bolted in proper position. Bulletin 74 of the New York Experiment Station advises the use of two leads of hose, and at the end of each hose a metal Y. The ends of each are about eighteen inches apart and furnished with a Vermorel nozzle. When spraying small trees, such as plums and cherries that have been kept well headed in, one side of a row is sprayed at a time; the wagon is kept slowly moving, and the driver directs his spray from the two nozzles at the lower branches, while a man standing on a platform in the rear is able to reach the upper part of the tree. The third man is required to work the pump. In spraying large trees it is necessary to stop at each tree, and the hose should be provided with a bamboo extension. Such an outfit cheaply rigged up, is thought to be more satisfactory for orchards than the expensive power machines.

APPLES are found by Prof. Waite of Washington to be more inclined to be sterile than pears. Indeed as a rule, he says very little fruit, on either apple or pear, is the result of self-pollination. The great barrenness of the Baldwin orchards in Southern Ontario is perhaps due to this fact. We wait further investigations with great interest.

Of PEARS, Prof. Waite found the following either wholly or in part incapable of setting fruit from self-fertilization, and require pollen from some other variety to render them fertile: Anjou, Bartlett, Boussock, Clairgeau, Clapp Favorite, Easter Beurre, Howell, Lawrence, L. Bonne, Mt. Vernon, Pound, Sheldon, S. du Congress, Winter Nelis, etc.

Self-fertile sorts: Duchess, Bosc, Buffum, Flemish Beauty, Kieffer, Le Conte, M. Elizabeth, Seckel, Tyson, White Doyenne, etc.

A great contrast was noticed between self-pollinated and cross-pollinated fruits. Self-pollinated fruit is narrower and not well filled out towards the blossom end. Some varieties, however, produced perfect fruit. Self-pollinated fruit is slightly later ripening than the crosses, as well as somewhat smaller, and was seedless or nearly so.

His conclusions are that many varieties of pears require cross-pollination; the pollen from another tree of the same variety is no better than from the same tree. Impotency of the pollen is not due to any deficiency of its own; pollen of two varieties may be absolutely self-sterile, but perfectly cross-fertile. Plant mixed orchards, or at least avoid solid blocks of one variety. Plant only three or four rows of a variety together, unless experience has shown it to be perfectly self-fertile. Be sure there are bees in the neighborhood or within two or three miles, to properly visit the blossoms.

WORK AT MAPLEHURST.

Perhaps other fruit growers would like to compare notes with us about work. So we will keep a kind of journal during 1895. What is done here may be suggestive of work to others and, if so, will repay us well.

Jan. 12th.—In our big orchard the pruning is a gigantic undertaking and if left till spring will never be completed. So on principle we begin with the vineyard in the fall, but in practise seldom get fairly at work till mild days in winter, and the days must be mild indeed, or one is chilled to the bone with such a slow job. The foreman is the only man on regularly now, and perhaps he would not be if our time were not so occupied with the work of the Association. We have pruned our grape vines mostly on the Fuller system, cutting Concords back to fifty or sixty buds. The Wilder we prune longer, as it bears better, with long pruning. The best method is a problem but grapes yield so little money, that we must study the most economical method before the best

Our foreman is intelligent, studies his work, and tries to follow out our ideas pretty faithfully. So many men want to run things, if placed in charge. We did feel vexed to find about two hundred young peach trees just in bearing age, pulled out by the roots; but on investigation we found all were touched with yellows, and our rule, now long standing, is to dig out and burn every tree so affected.

There need be very few vacant hours There is no time to sit around in a bar room or in a village grocery, spinning yarns, even in winter. Our foreman is always busy. When, mild he prunes; when cold, he cuts up the brush and stumps into fire wood, or hauls out manure: when stormy, he makes barrels, or boxes; repairs or sharpens tools; paints wagons, and numerous other things. Last week it stormed, and he re-floored the stables, and thus saved a carpenter's bill.

We encourage our men to read, especially on our line of work. During January and February we only require eight hours for a day's work, and expect the leisure time to be given to reading the best works on horticulture. It pays too. We only wish gardeners and fruit growers generally would follow out this plan for their own benefit.

Question Drawer.

Spray for Black Knot.

688. Sir,—Do you think there is any kind of spray which would help the black spot or sun scald?

W. Butcharet, *Port Moody, B. C.*

Reply by Mr. John Craig, Ottawa.

If by "black spot" is meant the apple spot or apple scab, we are glad to say that we have in the Bordeaux mixture a well recognized preventive remedy. Three applications of this fungicide made at intervals of two or three weeks apart, and beginning before the leaf buds open, will certainly prove beneficial; and effective in proportion as it has been thoroughly applied.

The black spots which appear on the bark of young trees are undoubtedly due in some instances to the bacterial disease which causes the blight on apples and pears. In other cases it might, and is generally called sun-scalding, and is probably due to sudden extremes of temperature in spring, intermingled with warm sunshine. Some orchardists in the Western States prevent this injury in a measure, by shading the stems of their young trees on the south and west sides, by laths fastened together and held about the tree with wire. Undoubtedly, a valuable aid towards keeping the bark of fruit trees in a healthy growing condition is the practice of washing the stems and main branches with alkaline washes; a strong solution of washing soda thickened to the consistency of paint with soft soap, and applied by means of a white-wash brush early in June, will have an exceedingly beneficial effect.

The Ritson Pear.

689. Would the Ritson Pear be of any value in this locality?

John Spencer, *Henrysburg, Que.*

Reply by Mr. John Craig, Ottawa.

I am unable to answer this question satisfactorily. Ritson killed out the second year of its trial at the Experimental Farm, while Flemish Beauty trees, though injured, are making some headway each year, but have borne no fruit. Ritson having originated in Oshawa, was supposed to be valuable on account of special hardiness. This is only our experience with two trees. I am inclined to think that Flemish Beauty might be cultivated with profit in the more favored portions of Missisquoi and St. John counties. If Flemish Beauty has succeeded at or near Henrysburg, then it might be advisable to try a few trees of Ritson, but it would not be wise to plant largely of it at first.

Spraying Pumps.

690. SIR,—You would greatly oblige me if you would give me the names of some of the best spraying pumps and necessary outfits for spraying apple, cherry and pear trees, and which you think is the most desirable pump, to use in an orchard of six hundred trees. The greater part of my apples are scabby every year and seem to be growing worse, and I would like to experiment with spraying. The Alexanders shown at the World's Fair from British Columbia were mine, and at one time I used to take the first prizes at British Columbia fairs for apples of this variety, but of late they have been too scabby.

GEORGE MEAD, *New Westminster, B.C.*

There is no doubt that our corrospondent will find most satisfactory results from spraying his trees with sulphate of copper, as directed in other parts of this Journal. There are two pumps manufactured in Ontario, both of which seem to work satisfactorily. We believe both firms intend to advertise in our Journal, so that our correspondent may write to each of them regarding terms.

Norway Spruce From Seed.

691. SIR,—How do you raise Norway Spruce from seed? I am a young man on a new place D. N. ANDERSON, *Wyoming.*

You would do better to buy seedling Norway Spruce trees from some one who makes a business of raising them. You can buy them very cheap. The seeds are gathered as soon as ripe and branches with cones hung in a dry place, surrounded with fine muslin, which catches the seed. They are kept in sand or a dry place until early spring and then sown thickly in a damp, partially shaded spot. One great secret is to keep them in a uniform state of moisture. Soaking the seeds in hot water a few days in advance of sowing will hasten sprouting; but the water should be changed daily for fear of fermentation.

Variety of Pear to Fertilize Anjou.

692. SIR,—What would be the best variety of pear to fertilize the Anjou; as this latter is self-sterile? G. H STANFORD, *Hamilton.*

Reply by Prof. Beach, of New York Experiment Station.

Concerning the best pear to fertilize the Anjou, I will say, that any pear blossoming at the same time might be expected to fertilize the Anjou satisfactorily except during unfavorable weather. I submit herewith a list of pears which blossom at the same time as the Anjou, from which your correspondent can select varieties most satisfactory to him: Angouleme, Bartlett, Boussock, Buffum, Clairgeau, Easter Beurre, Flemish Beauty. Kieffer begins to blossom here shortly before the Anjou, and does not remain in blossom quite so long as that variety. I may also add Lawrence, Manning's Elizabeth, Seckel and White Doyenne.

Spraying Pumps.

693. SIR,—Would you please name, in an early number, the best spray pump for fruit trees?

S. B. SMALE, *Wroxeter.*

There are at least two excellent spray pumps advertised from time to time, in our columns, either of which give excellent satisfaction provided a good nozzle, such as the McGowan is used.

Planting and Pruning Raspberries.

694. SIR,—Which is the better way to plant raspberries, in hills or in rows? I notice "J. C.," in the Montrerl Family Herald, says to plant 3 feet apart in rows 7 feet apart; and "L. B. Pierce," in Green's Fruit Grower, is thankful that his are in hills. Which is the best variety for a commercial plantation? Should the tops be pinched off? if so, at what height from the ground and at what season of the year? Is wiring or any other kind of support necessary? A reply in next CANADIAN HORTICULTURIST will greatly oblige

AMATEUR, *St. Catharines.*

The choice of planting raspberries in hills, or in rows, would depend largely on the extent of the grounds. If it were important to economize space, the rows are most desirable, because in this way the most fruit may be grown on a given plot; but where land is plentiful, it will be a great saving of labor to plant in hills four feet apart each way, so that all the cultivation may be done with a horse. The best variety at present grown is the Cuthbert, although there are many new claimants for favor, among which possibly something superior. The tops of the raspberry canes may be shorn off in spring with a hedge or grape vine shears. The height depends upon the vigor of growth. The object is simply to cut away the weak portion, and thus direct the energies of the plant to the stronger buds and thus produce the finest possible fruit. No support is necessary with raspberries if cut back as indicated.

Answers to Queries. (See pages 39 and 40.)

Plum Growing.—(Question by Alum Stone, Cedar Springs.)

Washington, Lombard, Bradshaw, Imperial Gage, and Reine Claude are leading plums. The Japan plums are new and promising. Clay loam well drained is perhaps best soil; I have for sixteen years continuously gathered plums from trees on a soil that is called sandy. Barnyard manure suits plums; ashes or muriate of potash on soils previously named, might often be useful. Apricots cannot be relied upon.

In addition to hardy peaches named by Mr. Hilborn, Early Rivers and Smock may be noted. We have no peaches that are hardy beyond question.

W. I. R., *Oshawa.*

For Raspberries on a strong clay loam containing sufficient potash, barnyard manure would be better than artificial fertilizers. Ashes or muriate of potash on lighter soils are called for. Bone dust or superphosphate might be useful on a soil otherwise rich.

Varieties to Plant.—(Question by W. Campbell.)

(1) **Peaches.**—Early Rivers, Hyne's Surprise, Mountain Rose, Yellow St. John, Crawford, Elberta, Crosby and Smock, are now leading peaches. Alexander and other very early clingstones are of very little use.

(2) **Plums.**—See list of plums above. If sour plums, slow growers, or varieties especially liable to short crops or rot, are wanted, the list could be lengthened easily.

(3) **Pears.**—If Mr. Campbell has a nice warm soil in Southern Ontario, he will get the earliest returns and the handsomest orchard by planting Keiffer pears. In many localities they would produce fruit that could scarcely be eaten. With me the Keiffer produces annual crops of beautiful pears, which, in November, are good enough for the best subjects that Her Majesty possesses. Bartlett has led hitherto, but too many have been started.

(4) **Cherries.**—100 Early Richmond cherries would give the best results in the shortest time. A few of other varieties of sour cherries might be useful.

(5) **Grapes.**—Concord and Morden grapes are the safest; Moore's Early is a slower grower and less productive. If there is a call for white grapes try Niagara.

(6) **Profits.**—If you have a good, well-drained soil, well manured and well cultivated for seven months each year, you ought on the sixth year to harvest a crop that would pay the expenses of that year and a share of the original cost of trees and vines. A successful plantation might do very much better To plant the necessary fifteen acres and care for it, it would cost a large sum, and if the sixth year could square the accounts there would be room for thankfulness. Many practical farmers try to grow fruit at a profit and many fail to do so. The right man with the right soil and good market facilities is very likely to succeed. The possession of capital, practical dexterity, persistent pluck and technical knowledge, are some of the qualifications of the right man.

E. MORDEN. *Niagara Falls South.*

Open Letters.

Report on Plants.

SIR,—The Fay's Prolific currant which I received in 1885 has not been productive, nor is it hardy enough for this part, as it is frequently winter-killed. The Early Victor grape received in 1886 is a good grower and hardy, but a poor bearer. The berries are small and the bunches small and scattered. The Niagara grape received in 1887 is a good grower, hardy and productive. It ripens about the middle of September. The Triomphe de Vienne pear received in 1891 is growing well, but does not seem hardy enough for this part. It was frozen level to the snow in the winter of 1893, but has grown up again.

A. STEWART, *Stewartsville, Ont.*

Vegetable Gardening.

SIR,—I think it would be of great benefit to us farmers in Nova Scotia if you were to have an article every month on the farm garden suited to this climate. The cultivation of the vegetable patch is by no means so usual as it might be here. My extra stuff I have had no trouble in disposing of in the neighborhood at remunerative prices, and I intend this spring to pay more attention to this branch than formerly. I am of the opinion that, providing there is a near market, more money can be made by the personal attention to a few acres of vegetables than by running a large farm of roots and cereals I would say, seed down to hay all surplus land for stock running, and concentrate energy, barnyard manure on the orchard and truck garden. Wishing a happy and prosperous year to yourself and our own valuable Journal, I am, yours truly,

H. O'KEY, *Port Williams, N.S.*

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Mitchell's Perfected Carrot—A beautiful Yellow Carrot, fine for table or stock. Has been grown to yield 2000 bushels per acre, pkt. 5c., oz. 15c., lb. $1.00.

Best Globe Danvers Onion—Pkt. 5c., oz. 20c., lb. $1.00.

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400 Acres IN EXTENT 400 Acres

HELDERLEIGH FRUIT FARMS and NURSERY.

One hundred acres in bearing Fruit-Trees, from which cuttings, buds, and scions are taken for propogation. Hence I know my nursery stock is absolutely pure. A personal visit from intending purcharers is solicited. "Seeing is believing." Everything offered graded scrupulously. Beware of nursery stock the chief claim for which is cheapness. A tree should last many years, and bear many dollars worth of fruit, what false economy to save ten cents on the tree and lose ten dollars on the produce. Quality, thrift and purity considered I will more then compete with any nursery offering stock in Canada. A handsome Catalogue and a Price List Free on application to.

E. D. SMITH,
Winona, Ont.

Fruit Farms for Sale.

Special rates allowed for ads. under this head. We have letters inquiring for Fruit Farms in Ontario, and this will form a convenient means of communication between buyer and seller.

Fruit Farm for Sale. 134½ acres of Land, good Buildings, cost over $3,000; two Tenement Houses and Fruit House, 30x38. Thirty acres of Orchard Trees, 15 years planted. Varieties: Spy, Baldwin, Russet, Greening, and about 75 Flemish Beauty Pear Trees. Situated at Colborne, Ont. To be sold cheap, $1,000 down, and long time given for balance. Thousands of tons of Swamp Muck on the Farm; it assays 45 lbs. Nitrogen to the ton, air-dried. Address—I. K. FULLER, Colborne, Ont.

FRUIT FARMS GRAIN AND STOCK FARMS ALSO FOR SALE

APPLY TO W. W. KIDD, GRIMSBY, ONT.

FRUIT FARMS FOR SALE.

At Clarkson, 16 miles west of Toronto, 80 acres sandy soil, good house and out-buildings, 2 wells, 425 apple trees, 500 grape vines, 10 cherry trees, 430 plum trees, 500 pear trees, 1½ acres raspberries, all in good bearing condition. Churches and Schools convenient, possession immediately, apply to

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THE CYCLAMEN.

THE

Canadian Horticulturist

Vol XVIII. 1895. No. 3.

THE CYCLAMEN.

THESE delightful winter and early spring flowering plants have of late years been so much improved that we shall scarcely recognize the small, comparatively insignificant blooms we used to meet with, in the splendid, large, broad-petalled, distinctly-colored forms and highly-scented types of this flower, now so plentiful. For this great change we are much indebted to such men as Mr. Warren, of Isleworth, also a Mr. May of the same place. Each of these growers have low spanned houses, graded in temperature, in St. Margarets, West Middlesex, in which the culture is about the same, but there is a difference in the strain. The old type of the grandiflora family, with its long stems and large flower, has given place, in response to the persistent efforts of these and other London florists, to a dwarf stem of leaf and flower, without any diminution in size of bloom. They are now of a very robust constitution, remarkably free-blooming, and in every way well adapted to house cultivation, and as house plants have few equals, if any superior. Few flowers respond with such a generous profusion of bloom, to moderate care and cultivation, as does this plant. This fact is impressed upon me more every season as I look upon the magnificent array of color, smiling as they stand upon the benches, clean, bright and cheerful, like the refreshing greetings of the sunbeams after dark and dreary days. It gives a thrill of real delight, such as the millionaire cannot abstract from the intrinsic worth of his gold, as we approach them and count, as I did this morning, on one plant nearly 100 perfect blooms, and buds uncountable, nestling at the base of the leaf stems and on the crown. To the ladies, let me say,

this attractive and very useful plant, flowering from October till August, is very easy to manage, even to growing from seed. Get the best strain of seed—Williams' prize strain is even now superseded. Sow in a small box about two inches deep, in soil of a light nature, press the seed its own depth into the soil with a flat piece of board or shingle and cover lightly. Place in temperature of 55°, or thereabouts, cover with glass for a while in order to keep slightly moist, not wet. After a while lift the glass and keep evenly damp. You will soon see the bulblet appear.

Then as soon as they have two leaves, if they need more room prick off into another box farther apart, or better still, into small or two in. pots singly. This is the better way, not five or six in a pot. Grow on and give plenty of air, and don't let the hot sun strike them directly, as they are fond of shade, specially in hot days of Fall and Spring months. Re-pot as soon as roots move well to the pot, and let the soil have a little well decayed manure mixed with it; drain the pots well, keep them growing at 55° to 65°, and you will soon be rewarded with bloom that will delight you. I like the grandiflorum type of the French growers at the present time. Having now on the benches over 1,000, I am able to see the differences of type in color, form, and flowering nature. If you prefer buying a plant already in bloom, you can get of your nearest florist your choice of color, etc, and treat it as I have indicated, taking good care to keep off the green-fly (perhaps its worst enemy), also the thrip—a thin, long, black bug which will quickly destroy the foliage by eating its fleshy under-parts. Watch them closely on the younger leaves, and you can easily destroy without the aid of any insect destroyer. If your husband smokes tobacco, ask him to throw a whiff or two under their leaves, and Mr. Fly will soon grow dizzy and fall on the top of the pot, then shake him off and destroy. If you try to keep your corms or bulbs to a second and a third season, don't dry them out to a withering degree; but simply let them rest, with sufficient life in the soil to give nourishment to the bulbs, in which lies all the force, energy, or vitality preparing for another and greater effort next season in abundance of bloom and foliage. Start them afresh by watering more freely any time from August to October, as you may wish them in succession; also grade the temperature, as you may wish to keep back or hasten into bloom. By all means try and get a packet of seed of the pure white, heavily scented strain, or a bulb, and you will be delighted. Sow in the house, we would say in greenhouse, in August, September or October. The cut blooms also you will find lasting and very useful. Should any reader like to ask a question, I shall be pleased to give an answer, if able, through these columns.

I may say this plant has some six species, bearing such names as Cyclamen European (hardy). Cyclamen purum (small flowering), Cyclamen giganthus grandiflorum (large flowers). Another one is, Alpina asperula (or violet of the Alps), so called because the Alpine ranges are its native home, but of them all I would advise you to get the Cyclamen giganthus grandiflorum.

WESTERN NEW YORK FRUIT GROWERS.

THE writer was present at the recent meeting of the Western New York Horticultural Society, and, as usual, heard many things worth noting for the benefit of our readers. Probably there is no gathering of fruit growers where so many men who are specialists in their respective departments are met together as at this meeting at Rochester. This great meeting of practical and scientific fruit growers is one of the most important on the continent, and deserves a regular delegate from us who shall report to us the important points of their discussions. No delegate was appointed by our Association this year, but, in response to a special invitation to read a paper, the writer was present during a part of the sessions. There were present about five hundred of New York's leading h rticulturists, besides such students of science as Profs. Bailey, Wayte, Slingerland, Halsted, Beach, Saunders, Van Slyke, and others, all noted specialists in their respective departments.

Prof. Wayte, of the Department of Pathology, Washington, gave an exhaustive address on "The Pear Blight," illustrated with lantern slides. By means of

FIG. 726—PRESIDENT W. C. BARRY.

these he showed the microbe of the blight, and stated that he had frequently inoculated healthy trees with it, thus introducing the blight. Thence in the young and succulent growth it would spread very rapidly throughout the trees until it reached those parts which are too dry and tough in texture to afford further development. Another common method of spreading the blight was by means of insects which carry the microbes from one blossom to another while they are gathering honey. Thus, while the bees are among our best friends, because without them a proper fertilization of the blossoms cannot be effected, and little fruit would grow to maturity, yet in the way described above they are the cause of more or less injury to our pear orchards.

The blossoms are usually the part first affected, for the microbe finds a most ready entrance into the cells of the trees through the nectar disk of the flower. Professor Beach has proved the correctness of this theory in an orchard arti-

FIG. 727.

CUT OF COLUMBIAN RASPBERRY, SENT BY THE INTRODUCER.

ficially blighted. He covered numerous blooms in the orchard with mosquito netting, and in not one instance were these blooms affected, while those not so protected were very soon affected with the blight.

Another way of access for the microbe of the blight is through the young and tender tips of fast growing trees, and on this account it is wise to avoid applying too much nitrogenous manure to the pear tree.

The wide-awake fruit grower could largely save his trees from blight by cutting off the blighted portions, whether they be blossoms or tender young shoots, just as soon as they appear and before the blight has time to spread. Blighted limbs, when dry, do not spread the infection, because the microbe soon dies in dry wood.

There was a very lively discussion at another stage of the proceedings on the benefits of spraying. An interesting paper was read by Mr. Albert Wood, who is extensively engaged in growing apples. He gave his personal experience, stating that his apple orchard covers twenty-five acres, and that last year it yielded twenty-five hundred barrels of fine fruit, as a result of the thorough treatment with Bordeaux mixture. His orchard was planted in 1860 and yielded fairly well until about eight years ago, when it ceased to be productive. His first experiment was with two trees which he sprayed faithfully, and, as a result, there was a good yield, while the ones untreated gave very little fruit. The next year he gave his whole orchard two applications and there was hardly a tree but was breaking down with the quantity of fruit. From fourteen trees which were neglected he picked only thirty-five barrels of fruit, which, had they yielded as the rest of the orchard did, would have produced one hundred and thirty-five. If such results as these can be obtained by thorough spraying, surely the fruit growers of Ontario cannot be too industrious in the treatment of their orchards with the Bordeaux mixture during the coming season. They should begin before the leaf buds open and give their trees a thorough preliminary treatment with sulphate of copper, one pound to twenty-five gallons of water. On another page we give a table prepared by Professor Craig, of the Central Experimental Farm, Ottawa, in which full instructions will be found concerning the time and method of spraying our trees and plants, and we hope that we shall all have some practical experience to report at our next meeting at Woodstock.

Mr. Tabor gave an address on "Nature's Remedies for Diseases in Fruit." Speaking of the strawberry, he gave the following as the five best for profit,—Michel's Early, Haverland, Lovett, Bubach and Gandy. The Timbrell, he said, is a very good grower and possesses a fine flavor, but is not as fine looking as some others for the market.

His method of training was a modification of the Kniffen system, using only two main arms which he trained along the top wire, while from these he allowed the branches to hang. He said this was the most economical as regards time and consequent expense, and he believed the yield per acre was as great as by any other method.

Mr. Dibble stated that he had made a specialty of potato culture and had succeeded in getting a yield of over two hundred bushels per acre. In order to be successful, it is important, in his opinion, to grow those varieties which are suited to the soil. It is also important to use the concave knife in cutting the tubers for planting. Close examination proved that there was a tree-like growth from the stem end of the tuber to the terminal eye and branching off to each of the other eyes. The concave knife takes out a branch with each eye, and thus favor the best results in growth.

In reply to a question as to what are the four best varieties of pears for profit, Mr. Willard replied,—Bartlett, Howell, Duchess and Keiffer. Mr. Woodward said that his opinion had changed so often that he really did not know

FIG. 728.—COLUMBIAN.

what to say at present. At one time he would have planted all Bartlett and Duchess, at another time the Keiffer, and at another time the Clairgeau.

Mr. Barry favored the Winter Nelis and Bosc. Both of these varieties should be top worked. He recommended Clairgeau on account of its fine appearance, and he would not leave out Anjou.

There was a splendid show of fruit in the room adjoining the place of meeting. Among other things we noted particularly was the Columbian raspberry, which we hope to have tested at our Ontario Fruit Experiment Stations as soon as possible. The accompanying cut is used by the introducers in their circulars, and they claim it to be wonderfully productive, a vigorous grower, like Schaffer, and that the fruit is very large. Samples of the heavy canes were shown, and also the fruit, which led us to desire to know more about its real value.

POINTS ON WINTER CARE OF THE ORCHARD.

THERE is too often a prevailing idea running riot among the average fruit growers that as soon as the harvest is gathered and the ground frozen the orchardist should have a long winter vacation. It is an undisputed truism that most people enjoy vacations, but the successful farmer, artizan or philosopher, must keep ever before him the motto : "Forego the lesser pleasure for the better good." Fruit growing, like every other industry, in order to secure the best results, involves careful attention to the orchard in all the seasons. So the winter problem in the orchard is a most interesting and important one. Tools or utensils of any description should be carefully housed, brightened and sharpened, ready for use. Time is never wasted in sharpening tools. Where drifts of snow lodge in young orchards, there is great danger of attacks from mice and rabbits. Manure should never be used as a mulch in the fall, as it serves as winter quarters for mice, whose depredations may be stopped by placing bands of zinc or strips of bark about the trunks, extending about two feet in height above the ground. These can be removed and used again next season. Tramping about the trunk on the snow is also of use. For rabbits, painting the trunk in fall with solution of one pound of bitter aloes to five gallons of water is useful ; cheaper still, shoot the rabbits. Trees that are found badly girdled in spring, that have been untreated, are often saved by using connective scions, connecting the bark above the wound with that below.

FIG. 729.

FIG. 730.

FIG. 731.

TREE BRIDGED WITH SCIONS.

At the beginning of the New Year, while the merchant is taking an inventory of his stock, the farmer should be taking an inventory of his orchard trees and plants, finding where trees need re-setting, pruning, grafting, etc ; constructing a map of orchard, locating varieties and making changes, so as to be ready to begin work systematically in the spring. If orchard land needs draining, a map of the drains should be made, the surveys being taken during warm winter days, and carefully drawn out for future reference. Another important point is

the removing of old, decayed or lodged fruit from the limb, such as apples, pears, and "mummied plums." These should be destroyed, as they furnish storehouses for germs of fungous diseases living through the winter. Great care should be exercised in winter packing of apples to destroy all refuse, old apples, leaves, etc.; inspecting cracks of barrels for pupae of insects, such as codling moth, which often hibernate in this manner.

Trees should be inspected for the bark-louse, and scraped,—exercising care with young trees,—letting the scales fall upon the snow; using a hoe on large trees. The black-knot that infests the plum and cherry trees should be looked after and the knots cut off and burned at once, as they are now filled with winter spores inclosed in little sacks, which burst open in the spring and are distributed by the wind. The cut surfaces should be treated with an application of kerosene or turpentine, rubbed on with a cloth. When trees or limbs are badly infected, they should be removed and burned.

The manure heap should never be neglected during the winter. An amateur fruit grower writes that his horse-manure heap was destroyed last winter by burning. This is remedied by mixing other manures with the heap, or by adding earth. Watering thoroughly and often will serve the same purpose. Too many permit their manure heaps to suffer. This is wrong, as stable manure is one of the great agents in profitable orcharding; its presence in the soil regulates to a large extent the heat and moisture, which commercial fertilizers will not do. All the manure possible should be applied, and then, if necessary, pieced out with commercial fertilizers. The cutting of apple scions for winter root-grafting should be done now, and stored away in a cool cellar, in leaves or sand, until ready to be grafted upon the roots of seedlings grown from apple seeds. These seedlings can be easily raised, or can be purchased from nurserymen for from three to four dollars per thousand, and every fruit grower should do his own root-grafting, the process being easily acquired, thus keeping down the nursery expense. These are a few of the many points that enter into profitable winter orcharding.—PROF. E. E. FAVILLE, in Farmer's Advocate.

Tender Plants.—The skillful gardener will find a place for many tender plants, especially for the gladioli, dahlias and tuberous begonias, which have been stored in the dwelling house during the winter. A place can also be found for the large flowered canas, not in isolated groups on the lawn, but in small groups in the margin of a shrubbery where their stiffness will be concealed, yet their fine colors will be useful. Phlox Drummondi, sweet peas, asters, calliopsis and tall nasturtiums can also be added. The most important thing we have to consider in gardening with hardy plants and shrubs is their arrangement. We must study to produce a pleasing effect at all seasons—to have a succession of bloom, that the garden shall never be dull or uninteresting.

THE POSSIBILITIES OF OUR PROVINCE.

I HAVE been a reader of THE CANADIAN HORTICULTURIST since it was founded, and each year it has become a more and more welcome visitor to my home. Prior to my twenty-five years residence in Ontario I was for fifteen years chiefly engaged in the nursery business, near, and at Rochester, New York. I made a large delivery of trees in the autumn of 1853, at Dunnville, Cayuga, Paris and Brantford. I made a careful investigation of Western Ontario at that time after my business was completed, and fell deeply in love with it. When the soil, timber, water, climate, fruit and agricultural possibilities are considered, combined with the beauty of the landscape, as a home for the farmer, fruit and flower culturist it is not surpassed, if equalled, in North America. No sunshine south of the lakes like that north of them. No air so clear, dry, bracing and invigorating. No winter air like that in Ontario. My winters at Ottawa in this respect were *most delightful.* When I tell my American friends of enjoying a walk with my friend Alexander Gun, of Kingston, with the thermometer 20 degrees below zero, they are inclined to question my sanity or veracity. No autumn leaves here like those among oaks on the hills east of Toronto. No winter fruit like the Ontario apples, in flavor. We get size and beauty, but not the sprightly flavor which makes an Ontario apple so refreshing. I purchased some of the finest Spitzenburgs a few days ago, at 80 cents per peck, that I ever saw in my life, but they were not up to par in flavor by any means. The possibilities of Ontario as a fruit-producer no living man, it seems to me, realizes. We get early fruits from the south, but the time will come when late fruits of high quality will command a high price in this market, and pay as well as early fruits. We have consumed 1,600 carloads of fresh fruit from California in New York and Brooklyn last year, sold at *auction;* they have realized from $900 to $3,800 per car, depending upon quality and condition when they reach this market.

An average price would be $1,300 per carload of ten tons of fruit; 6,000 carloads crossed the Rocky Mountains in 1894, which, at an average of $1,300 per car, means gross sales of $7,800,000 at auction prices; pretty good for an infant fruit industry in hard times. Twenty-five years hence greater New York will have a population of not far from 6,000,000, and this State of 10,000,000. A fast line of steamers from Toronto to Oswego, and thence by the Ontario and Hudson deep sea canal to Albany, and by the river to our wharves, will open to your growers of small fruits, to come in after the local crop is gone, an unlimited market, and the same for all the plums and apples you can produce. The

country from Kingston west to Windsor might become a vast plum and apple orchard, and not over-stock this market.

Dr. Willard Parker was once asked if the Methodist profession was overcrowded in New York. He replied, not on the upper seats. This applies to farm products and fruits as much as to the professions. The same day that a carload of California grapes, pears, plums and peaches, sold for $3,800 at auction, on the same wharf, another carload sold for $900. Both came on the same train from California. The difference was one of varieties, selection and packing. The cost to the grower was the same.

When I began I only intended to write upon a letter of congratulation on the progress THE CANADIAN HORTICULTURIST has made, and to wish you continued progress and prosperity. My 25 years residence in Ontario is filled with happy memories which will continue a source of pleasure for life. I love the Canadian people so much that I am urging Jonathan to make love to them and propose marriage to them as a whole and not in "job lots." Kind regards to my friend, Dr. Beadle.

THOMAS WAYLAND GLEN.

543 Madison Street, Brooklyn, N. Y.

SET ASPARAGUS EARLY.

AN observance of the following directions will insure a good bed. Conover's Colossal is the variety you want. If raised from seed, make your seed bed rich with well-rotted manure. Sow seed in drills, about an inch deep, and rows far enough apart to admit of hoeing. Keep the soil mellow and free from weeds. In the fall, or succeeding spring, the plants may be set out in a permanent bed, which should be narrow to admit of cutting to the centre. Set the plants about 18 inches apart each way with crowns four inches beneath the surface, spreading the roots as much as possible. Before transplanting, the bed should be worked as deeply as possible, and liberally mixed with rotted manure. The soil cannot be too rich. Three years from the seed the bed may be cut sparingly. A year's time may be saved by buying one-year-old plants, which may be had of any gardener, and cost but little. Before winter comes on cover the young bed with about four inches of coarse manure, and in the spring rake off all but the finest of it. Select a warm, sunny spot for your bed, for it will thereby be earlier.—Farm and Home.

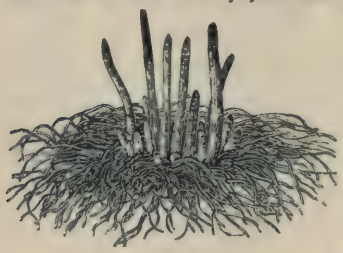


FIG. 732—ASPARAGUS.

SPRAYING FOR FUNGI AND INSECTS.

THE profits to the fruit grower of spraying his trees and plants as directed by professional experimenters appears to be of sufficient importance to induce every one of us to engage in it in real earnest during the year 1895. Indeed the benefits appear to be so decided, that no fruit grower can any longer afford to neglect the work. The monilia or fruit rot of the plum and cherry, the leaf-blight of the pear tree and the cracking of the pear, the apple scab and the Codling moth, all appear to have been fairly well controlled by spraying in 1894, according to the Report given us by Prof. Craig, at Orillia, last December. For instance, here are some extracts under the head of "RESULTS":—

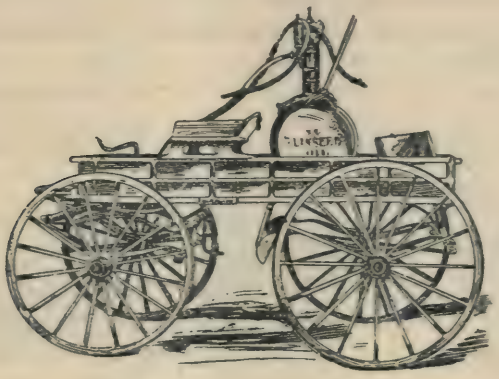


FIG. 733.—SPRAY PUMP.

Cherries.

The cherry suffers from the same diseases as the plum. The following are results gained from two series af experiments in preventing "rot" on Yellow Spanish cherries:

(1) Sprayed tree yielded 90 lbs. of fruit Unsprayed tree yielded 30 lbs. of fruit.

(2) One selected sprayed tree yielded 130 lbs. of fruit, which netted $9.25. One selected, equally good, unsprayed tree yielded 17 lbs. of fruit, which netted $1.20.

Pears.

Pear trees were sprayed to prevent "leaf blight" and the "cracking and spotting" of the fruit. The best results gained showed that Flemish Beauty pears sprayed, yielded 75 per cent. more marketable fruit than those unsprayed. Beurré Giffard gave practically the same results. The foliage of the treated trees was vastly superior to that on trees unsprayed.

Apples.

Apples were sprayed in several orchards, mainly to prevent injury from the fungus causing "apple spot" and the depredations of the codling moth.

The results gained show that the sprayed trees yielded 24 per cent. *more* of first-class fruit, 6 per cent. *less* of second-class and 18 per cent. *less* of third-class fruit than the same number of trees unsprayed.

The effect of this improvement *in quality alone* upon the gross receipts from an acre of bearing apple trees may be shown as follows:—Supposing the yield to be 50 barrels, we find according to results gained that spraying would give at ordinary market rates, $2.50, $1 75 and 75c., for first, second and third class respectively: $56.75 worth of No. 1 fruit, $31.50 worth of "seconds," and $6.97 worth of "thirds," or a total of $95.22. The same area unsprayed would give of No. 1 fruit $26.75, of No. 2 $37, and of third class $13.64, or a total return of $77.40, leaving a balance in favor of the sprayed acre of $17.82. This is supposing that all the "seconds" and "thirds," which in the case of the unsprayed is very large, could be sold. The cost of spraying an acre of apple trees will vary according to the size of the trees; using diluted Bordeaux mixture and making five applications, it need not exceed $6 and may be under $5. There would thus be a nett profit of $10 to $12 on the basis of equal yields and improved quality. As a result of the experiments referred to. and looking at spraying as *affecting the yield*, we find that the sprayed trees gave 74 per cent. of the total yield. This return added to the improved quality, gives a difference in the nett receipts of $51.53 in favor of the sprayed acre.

The SPRAYING MIXTURES recommended by Mr. Craig for use in 1895 are given below.

Bordeaux Mixture.

The ingredients are copper sulphate, lime and water, in the following proportions:

Copper sulphate	4 lbs.
Lime	4 lbs.
Water	50 gals., or one kerosene barrel.

FIG. 734.

To destroy leaf-eating insects, add 4 oz of Paris green. For peaches, use 3 lbs. each of copper sulphate and lime and 3 oz of Paris green, on account of the tenderness of the foliage.

When a single barrelful of this is required, dissolve in the barrel 4 lbs of copper sulphate (blue stone). Hot water facilitates the operation. To dissolve quickly place the copper sulphate in a cotton bag or basket, and suspend this in the vessel containing the water so that it is entirely immersed. Solution rapidly takes place. In another vessel slake 4 lbs. of fresh lime with as many gallons of water. If the lime when slaked is lumpy or granular it should be strained through a fine sieve, or coarse sacking, into the barrel containing the copper sulphate now in solution, fill the barrel with water. It should be used soon after being prepared.

When a large amount of spraying is contemplated it is a good plan to make up a stock solution separately, each, of lime and blue stone, which can be diluted as needed:—Dissolve 100 lbs. of copper sulphate in 50 gallons of water; two gallons when dissolved will contain 4 lbs. of the salt. In another barrel slake 100 lbs. of lime and make up to a milk by adding 50 gallons of water; when well stirred two gallons should contain 4 lbs. of lime. When it is desired to make a barrel of Bordeaux mixture, take two gallons of the stock solution of copper sulphate and add the same quantity of the milk of lime; if the lime is of good quality it will be sufficient to neutralize it completely. If the lime is air-slaked or impure, the right quantity can be ascertained by applying the ferrocyanide of potassium test. If the lime is deficient, a drop oi the ferrocyanide of potassium (yellow prussiate of potash) added to the mixture will turn brown. Add lime water till the drop of ferrocyanide of potassium remains colorless.

Ammoniacal Copper Carbonate.

Copper Carbonate	5 oz.
Ammonia	2 qts.
Water	50 gals.

This is prepared by dissolving the copper carbonate in the ammonia and diluting with water to 50 gallons. The concentrated solution should be poured into the water. Care should be taken to keep the ammonia in glass or stone jars tightly corked.

This mixture is more expensive than the former, but is more easily applied and may be used as a substitute, especially in the case of grapes where late spraying is necessary, and when Bordeaux mixture might, by adhering to the fruit, injure its sale.

Copper Sulphate.

Copper sulphate, 1 lb. to 25 gallons of water, is used for the first application only. It should never be applied after the buds burst, as it will injure the foliage.

As a guide to readers in their operations, we give, on the next page, Prof. Craig's *Spraying Calendar*, which will be of intense interest to our readers, many of whom will, we believe, follow it out in full. We shall be very glad to receive reports for publication, showing the results of faithful work done in all parts of Ontario. The trouble so far has been the careless half-hearted method of doing the work, and, in consequence, no wonder at the failure of good results.

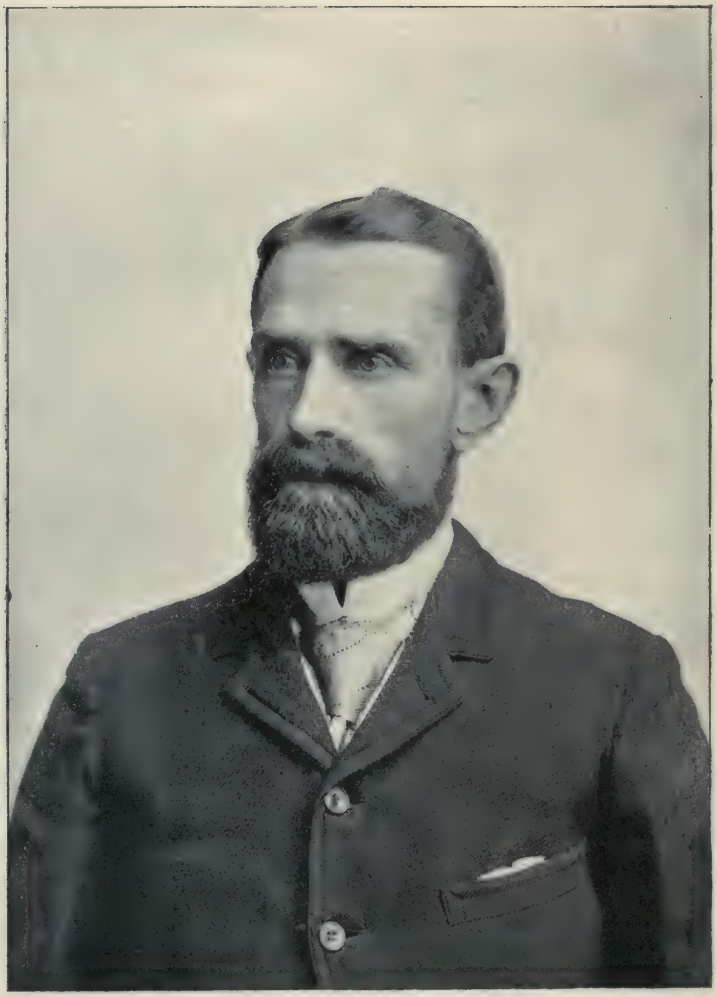
The Perambulating Sprayer.—A scheme for demonstrating the importance of spraying for apple scab, codling moth, and plum and cherry rot, has been devised by the Board of Control of the Fruit Experiment Stations of Ontario, and approved by the Minister of Agriculture. Three sets of sprayers are to be started, each under a competent man ; one set will travel through the counties along the north shore of Lake Erie, from Windsor to the Niagara River; another along the north shore of Lake Ontario, from Toronto to the St. Lawrence ; and another along the east shore of Lake Huron. Mr. A. H. Pettit, who formulated the scheme, is to be made the responsible director of the whole work.

Law for Fruit Packers.—So much fraud has been perpetrated upon the public by dishonest fruit packing that legislation to prevent it is in demand. The growers of the Niagara district have met and discussed the matter, and all agree that some measures are needed to protect the honest grower from having his reputation soiled by dishonest men. How best to do it is the question. It s proposed,

(1) To have apples and pears graded No. 1 and No. 2 ; (2) to have all graded fruit branded with the name and address of the packer ; (3) in case of ungraded fruit, that the top layer shall be a fair representation of the whole contents of the package ; (4) to regulate the sizes of fruit packages.

SPRAYING CALENDAR.

Plant.	1st Application.	2nd Application.	3rd Application.	4th Application.	5th Application.	6th Application.
Apple. Apple spot fungus, codling moth, bud moth.	*Copper Sulphate.* Before buds start.	*Bordeaux* Just before blossoms open.	*Bordeaux.* *Paris Green.* — Soon after blossoms fall.	*Bordeaux.* *Paris Green.*—10 - 15 days later.	*Bordeaux.* 10-15 days later if spot disease is severe	
Cherry. Rot, leaf diseases and injurious insects.	*Bordeaux.* Before flow'r buds open *Kerosene Emulsion* for aphis.	*Bordeaux.* *Paris Green.* — When fruit has set.	*Bordeaux.* *Paris Green.*— 10 - 15 days later.	*Ammoniacal Copper Carbonate.* 10-15 days later.		
Grape. Mildew, rot, leaf-eating insects.	*Copper Sulphate.* Before buds burst.	*Bordeaux.* *Paris Green.* — When first leaves are half grown.	*Bordeaux.* When fruit has set.	*Bordeaux.* 10-15 days later.	*Bordeaux.* 10-15 days later if disease persists.	*Ammoniacal Copper Carbonate.* If disease persists.
Peach—Apricot. Rot, leaf-curl, curculio	*Copper Sulphate.* Before buds burst.	*Bordeaux.* 3 lbs. copper sulphate 3 lbs. lime. 50 gals. water. Just before blossoms open.	*Bordeaux.* *Paris Green.* — Soon after fruit has set.	*Bordeaux* *Paris Green.* — 8 - 12 days later.	*Bordeaux.* *Paris Green.* — 8 - 12 days later if rot is prevalent.	*Copper Carbonate.* 10-15 days later if rot is prevalent.
Pear. Scab, leaf-blight, codling moth.	*Copper Sulphate.* Before buds burst.	*Bordeaux.* Just before blossoms open.	*Bordeaux.* *Paris Green.* — Soon after blossoms fall.	*Borpeaux.* *Paris Green.*—10 - 12 days later.	*Bordeaux.* 10-15 days later.	
Plum. Rot, shot-hole fungus, curculio.	*Copper Sulphate.* Before buds burst.	*Bordeaux.* *Paris Green.* — Soon after blossoms have fallen.	*Bordeaux.* *Paris Green.*—10 - 12 days later.	*Bordeaux.* 10-15 days later.	*Copper Carbonate.* 10-15 days later if rot is prevalent.	*Copper Carbonate.* 10-20 days later if rot is prevalent.



MR. F. W. HODSON,

SUPERINTENDENT OF FARMERS' INSTITUTES FOR ONTARIO.

PROMINENT CANADIANS.—I.

Mr. F. W. Hodson.

IN this case we cannot write under the head of Prominent Canadian Horticulturists, because, so far as we know, Mr. Hodson has not made a specialty of either fruit growing, or gardening. But he has recently been promoted to a position which is an important one to fruit growers, as well as to farmers. viz.: Superintendent of Farmers' Institutes of Ontario. Until recently, this work devolved upon President Mills, of the O. A. C., Guelph, but the burden was too heavy, and it was at length found necessary to appoint a man to give his time to this important work. Now the Fruit Growers' Association of Ontario, together with the Dairymens' and other Associations in Ontario, have the privilege of selecting a certain number of speakers on their own industry to make up the staff of speakers sent out to do institute work, and it is in this connection that we are somewhat closely associated with Mr. Hodson. Nor is he unacquainted with our work, for as managing editor of The Farmers' Advocate, he has frequently attended our meetings and reported upon the excellence of our work, in that journal

Mr. Hodson is the son of a prominent farmer and sheep breeder of the township of Whitby; and, owing to his evident abilities, was made associate editor of The Farmers' Advocate in 1880. He has also held the secretaryship of two important Associations—the Sheep Breeders' and the Swine Breeders'—and has been most successful in working up the interests of them both.

No wonder, therefore, that in response to numerous letters urging his appointment, the Minister of Agriculture has seen fit to accede, and place Mr. Hodson in a position where his abilities will have the widest scope.

Pruning Grape Vines.—That pruning is a great art, seldom mastered by even good gardeners, may readily be noted by the condition of grape vines, in most places All the lower portions of the main shoots are comparatively naked, and the few stronger branches grow from the upper portion of the vine; but a well pruned vine will be covered with strong branches from the base to the summit. This is really the leading object in grape vine pruning; but not one in a hundred knows how to bring it about. It is wholly accomplished by summer pruning. The upper branches are usually the strongest, and if left run they will draw the nourishment from all the rest. The well instructed grape pruner watches his vines during the season of growth, and whenever any one branch is inclined to grow stronger than its neighbor, it is either pinched back, in order to check its ambition, or else broken off entirely. The social problem of the "rich becoming richer and the poor poorer" applies here. We check the strong branch and the weaker is strengthened thereby.—Meehans' Monthly.

PRUNING GOOSEBERRIES AND CURRANTS.

Gooseberries.

CONFINE pruning chiefly to thinning out main branches and cutting out weak and exhausted parts, regulating the current year's young wood as evenly as possible over the trees at such distances apart that the hand may be passed down among them without being scratched. Allow no shoots to remain to grow inwards or in reversed positions whereby they tend to crowd the centres, which ought to remain moderately open. Keep the shoots clear of the ground by cutting away the lowest growths. The pendulous growing varieties require special attention in this respect, and when pruned ought to be cut to upward pointing buds. Prune erect growers to outward buds, and those of spreading growth to inside buds, which will modify to some extent their natural habit, producing more shapely and serviceable bushes. In thinning out, either cut the shoots dispensed with entirely out close to the old wood, or leave them to the extent of an inch, when they will form spurs at the base. A dusting of lime when the bushes are damp is good for the trees, destructive of insects, and a preventive of birds taking the buds. If manure is needed draw the earth from below the branches till the roots are visible, then spread a layer of decayed manure on them, covering with a sprinkling of fresh soil. The remainder of the soil outside the radius of the roots may be manured and forked over, or the latter alone will do where the ground is rich and the trees productive.

Red and White Currants.—As the disposal of a proper number of branches —usually five to seven in ordinary sized bushes—is effected early in the existence of the bushes the pruning is a very simple matter. It consists in pruning back to within an inch of the main stems all the side growths produced during the summer, shortening the extension growths in the same way with full-sized bushes, but in those required to extend leave a length of not more than nine inches. With weakly trees six inches is enough. The object of shortening the branches to these distances is to cause proper breaks of side shoots, and to strengthen the stems so that they can bear the large crops of fruit which are annually produced from the clusters of basal buds congregated on the spurs. Give the trees a good dressing of manure over the roots, and sprinkle the branches with fine lime, which serves to cleanse them of moss, and otherwise benefits them, as well as preserving the buds from birds, which, however, are not so destructive with currant, as gooseberries.

Black Currants.—These bear differently, and in pruning, abundance of young wood must be left, confining the pruning to thinning out the oldest branches and a large proportion of the latest bearing shoots. Strong sucker-like growths from the base may be freely encouraged, or vigorous growths from any part, but preferably originating in the lower parts of the bushes, can be utilized,

avoiding crowding. All the wood removed should be cut out cleanly, none being left to form spurs, as in red and white currants, though short stubby spurs which form naturally and have received light and air freely, must be retained. Shortening the leading shoots need only be adopted to regulate the size and symmetry of the bushes, but this is best effected by cutting out the longest branches from time to time.—Journal of Horticulture.

SEED BUYING.

As this is about the time when farmers and gardeners begin planning upon their crops for the coming season, and laying in their seeds, the following table may be of general service.

Reliable Table showing the Quantity of Seed usually Sown upon an Acre.

	lbs. bush.	
Barley, broadcast	48	2 to 3 bush.
Beans, dwarf, in drills	60	1½ bush.
Beans, pole, in hills	60	10 to 12 qts.
Beets, table, in drills		6 lbs.
Beets, Mangel-Wurzel		5 lbs.
Buckwheat	48	1 bush.
Cabbage in beds to transplant		½ lb.
Carrot, in drills		3 to 4 lbs.
Clover, red	60	20 lbs.
Clover, white	60	12 to 15 lbs.
Clover, Alsike	60	10 lbs.
Clover, Lucerne or Alfalfa	60	20 lbs.
Corn, in hills		8 to 10 qts.
Corn, for fodder	56	3 bush.
Cucumber, in hills		2 lbs.
Flax, broadcast	56	1½ bush.
Grass, Kentucky blue	14	3 bush.
Grass, orchard	14	3 bush.
Grass, English rye	24	3 bush.
Grass, red-top	14	3 bush.
Grass, timothy	48	½ bush.
Grass, Hungarian	48	1 bush.
Grass, lawn	15	4 bush.
Melon, musk, in hills		2 to 3 lbs.
Melon, water, in hills		4 to 5 lbs.
Millet	48	1 bush.
Oats, broadcast	34	2 to 3 bush.
Onion, in drills		6 to 8 lbs.
Onion, for sets, in drills		50 lbs.
Onion sets, in drills		6 to 12 bush.
Parsnip, in drills		4 to 6 lbs.
Peas, round, in drills	60	1½ bush.
Peas, wrinkled, in drills	60	1½ bush.
Peas, broadcast		3 bush.
Potatoes, cut tubers	60	8 bush.
Pumpkins, in hills		3 lbs.
Radish, in drills		8 to 10 lbs.
Rye, broadcast	56	1½ to 2 bush.
Spinach, in drills		15 lbs.
Squash, bush varieties, in hills		4 lbs.
Squash, running varieties, in hills		3 lbs.
Tomato, to transplant		¼ lb.
Turnip, in drills		2 lbs.
Turnip, broadcast		2 lbs.
Vetches, broadcast		2 to 3 bush.
Wheat, broadcast	60	1¼ to 2 bush.

Quantity of Seed required for a Specified Length of Drill.

Asparagus	1 oz. for 60 ft. of drill.
Beet	1 oz for 50 ft. of drill.
Beans, dwarf	1 qt. for 100 ft. of drill.
Beans, pole	1 qt. for 150 hills
Carrot	1 oz. ior 150 ft. of drill.
Cucumber	1 oz. for 50 hills.
Corn	1 qt. for 200 hills.
Leek	1 oz. for 100 ft. of drill.
Melon, water	1 oz. for 30 hills.
Melon, musk	1 oz. for 50 hills.
Onion	1 oz. for 100 ft. of drill.
Onion sets small	1 qt. for 40 ft. of drill.
Parsley	1 oz. for 125 ft of drill.
Parsnip	1 oz. for 150 ft. of drill.
Peas	1 qt. for 100 ft. of drill.
Pumpkin	1 oz. for 40 hills.
Radish	1 oz for 75 ft. of drill.
Salsify	1 oz. for 70 ft. of drill.
Spinach	1 oz. for 75 ft. of drill.
Squash, early	1 oz for 50 hills.
Squash, marrow	1 oz. for 20 hills.
Turnip	1 oz. for 150 ft. of drill.
Cabbage	1 oz. for 2000 plants.
Cauliflower	1 oz. for 2000 plants.
Celery	1 oz. for 3000 plants.
Lettuce	1 oz for 3000 plants.
Pepper	1 oz. for 1000 plants.
Tomato	1 oz. for 1500 plants.

J. A. BRUCE, in Catalogue.

TOMATO CULTURE.

CHAPTER III.

How to Make Plant Boxes and Set Plants in Them.

Rip up pine lumber 4 inches wide and ½ inch thick. To make a box, cut off three pieces (two for sides and one for the bottom) 30 inches long, and two pieces for the ends 3½ inches long at the bottom edge, and 4½ inches long at the upper edge. Nail them together with wire nails 1½ inches long; use two nails at the end of each long piece twelve nails to a box. Now you have a box 4½ inches wide at the top and 3½ inches wide at the bottom. Into a box of this shape the plants can be set with ease and rapidity; they can also be taken out quickly without much disturbing the roots when setting them out where they are to fruit.

For lifting the plants I have found nothing so good and handy as a stone mason's trowel. Cut enough off the point to leave a straight edge 1½ inches wide. File or grind the point and both edges as sharp as a knife. With this tool cut the plants out of the rows as soon as they begin to crowd each other. Cut a square face between the plants, and at the sides of the row cut, wedging the shape of the inside of the box. Cut the lumps out with a lump of earth about an inch smaller than the size of the box inside. Lift the plants with the trowel and hand, with soil adhering to the roots, and place them in the box so as to disturb the roots as little as possible. Put five or six plants in a box and fill up with mellow, very rich soil; press them in firmly, and water often, and very moderately at first, until the earth is settled well and the new roots started, then they may be watered according to their requirements.

When first boxed off they are better set close enough for the plants to just touch each other for a day or two. But care must be taken to give plenty of room as soon as growth starts, or the plants will be drawn and spoiled.

CHAPTER IV.

Growing Extra Large Plants.

If plants are wanted larger and more forward than the boxed plants are, order from a potter tomato pans 5 inches deep and 8 inches wide at the top, and 6 inches wide at the bottom, inside measurement. Lift the plants with a larger amount of soil than when boxing them, and set one plant in each pan, fill with very rich soil to within half-an-inch of being full when firmly pressed down. Water as directed for boxes, and give plenty of room. Plants so treated

can be grown to any size desired. I have often grown them eighteen inches high and branched out eighteen inches wide, and loaded with eight or ten fair-sized tomatos. And by carefully turning them out of the pans and planting them in the open ground they will grow right along and ripen their fruit very early. As soon as the large plants show signs of failing for want of plant food, water them with weak liquid manure.

CHAPTER V.

How to Prepare Beds and Force Plants for Fruit in Cold Frames.

Make beds on good, dry, well-drained rich soil fifteen feet long and seven feet wide. Work the soil fifteen inches deep, and if the subsoil is good and loamy, eighteen inches deep will be none too much. Mix in plenty of well-rotted manure, and pulverize all together as perfectly as possible.

If the soil is heavy and does not contain much sand, mix in about five or six bushels of sand of medium quality, neither very fine nor very coarse, and add one peck of unleached ashes. The sand once in the beds will be there for all time, and the same beds should be used every year. Each season manure them well with barn-yard manure, well-rotted; use also a peck of unleached ashes every season. More sand may be used each season if necessary; one-third of fine sand is not too much on heavy soils. One side of the beds should face to the south, and the north side of the beds should be six inches higher than the south side, when finished.

To make the frame, take good inch lumber, 14 feet long and 12 inches wide. Take two boards and cut the ends square, and leave them 13 feet 10 inches long Take another board 14 feet long and 10 inches wide, cut it in the centre, and use a piece for each end of frame: set up your side boards so they will be just six feet four inches apart, outside measurement; nail on the ends flush with the upper edges of the sides, letting the ends lap over about equal on each side. The lap on the end, though not used, serves to keep the ends from splitting when being nailed on and taken apart again. If three inch wire nails are used and frames carefully taken apart when not in use, the same lumber and nails will serve for at least twenty years. The sash should be all one size and be six feet four inches long, and 3 feet 6 inches wide and contain five rows of 7x9 glass. I have found the above size of frame the best and most economical. Four of such sash, cover a bed completely. Almost any size of sash can be used by making beds and frames to suit; but frames smaller than those described will not be found as profitable. Set your frame on the bed true, and let the edge of the south board down below the surface three inches. If any space is left open at the back, bank up with earth; put on the sash close and let the

beds heat up as hot as the sun will heat them for a day or two; then the beds will be ready to plant. The beds will be ready to receive the plants about four weeks earlier than it will do to plant in the open ground. Select the largest plants in stock, fourteen plants for each bed, six on each side and one in the centre at each end. Now dig six holes on each side and one in the centre at each end. These holes should be dug sloping toward the outside of the bed, and deep enough to receive the lump of earth at the roots of the plants. The lumps should be laid on their sides and should be so that the plants will be nearly flat and lean towards the frame on every side. The roots should be set near enough to the centre of the bed so that the tops of the plants will be about one foot inside of the frame. The four plants at the corners should lean straight for the corners of frame. Do not plant too deep. The lumps should not be more than an inch below the surface.

Set the plants when the sun shines, if possible. After planting, sprinkle on eight or ten gallons of water. The work should be done soon enough in the day to put the sash on and let the beds get good and warm before night. If the beds are watered as directed, they may be covered down close at two or three o'clock in the afternoon, and they will be all right till next day. Then if the weather is bright they must have some air, but they should be kept pretty close for two or three days. Afterward they must have air as required. Air by moving the sash apart. When there is cold wind from the north, air by moving the south ends of the sashes only. When the plants fill the frame and begin to crowd against the glass, raise the frame and hill up with earth under the edges at the bottom of the frame. Raise the frames but little at a time and often. If raised too much at a time, the plants will be drawn up too fast and injured more or less. As soon as all danger of frost is passed and the weather has become settled and warm, knock the frame apart, pull out the nails and pile up the lumber for another year. Have the beds between the plants perfectly clean. The next work is to train the plants. To do this, begin in the centre and take as many of the inside limbs of the plants as will fill up the centre and bend them into it. Then with the hands separate the remaining limps of each plant carefully and press them down to the ground and train them out in every direction from the bed. This process will let the sun into the base of the plants and cause them to set fruit rapidly and freely. Continue to train the plants outward as often as they grow together. Plants treated as above should yield at least half a bushel of tomatoes to each plant. The writer has often had ten bushels from each bed. The first two or three pickings has always brought in our markets six dollars per bushel. Then somewhat less every week until the best picked were sometimes as low as forty or thirty cents per bushel.

The plants should be set eight feet apart each way, and the vines will nearly meet together so that the vines will cover two-thirds more land than the size of the beds. Do not pinch or cut off any of the vines. I am aware that in giving the above directions I am going directly contrary to the directions given

by most, if not all, agricultural writers. But I know whereof I speak, having made a specialty of growing tomatoes in large quantities for market during the past thirty-four years. Every year I have had a good crop, and most seasons the crop has been very abundant. The finest flavored and best ripened fruit is found beneath the foliage, where it is shaded from the scorching sun. This applies only to early fruit; late fruit, that must be ripened in cold fall weather, or not at all, would be benefited by the heat of the sun.

In the preceding chapters I have been particular to give minute directions for raising and forcing plants so as to get very early fruit for the market, as it is from the very early crop that the largest profits are to be obtained. Yet plants grown as above are expensive, on account of the large amount of glass and fuel required. It also takes skilled care and a large amount of room to grow such plants. Therefore they cannot be grown for less than twenty-five dollars per hundred. The writer has often refused three dollars per dozen for those extra early large plants, knowing that they were worth more to plant out for early fruit. Such plants are safe for yielding five pounds of early fruit the last of June and first half of July. This extra early fruit will always sell for ten cents per pound, and in some markets, double that amount; and the plants will ripen as much fruit afterward as the main crop plants. I am thus particular, in order to show the new beginner the value of these extra early plants.

St. Marys, Ont. S. H. MITCHELL.

CURRANTS AS A GARDEN CROP.

Currants do best on a rich, clay soil with good drainage. They will do very well in a rich, moist loam, and even in sandy land large crops may be raised if it is rich and the bushes are kept well mulched with straw or strawy litter. The lighter the soil the more important it is not to have a southern exposure for currants. When currant bushes get so thick as to need pruning, the older shoots should be cut out, but this must be done with moderation, as the older shoots are, up to a certain point, the most productive. When they begin to appear weak they should be removed, and a good dressing of manure given. The bushes should be kept thoroughly free from weeds and grass at all times.

The cuttings should be made 10 inches long, strong, close-budded shoots of the same season's growth and set slightly slanting in a trench, so that 2 or 3 inches only of the top of the cutting is left exposed when the earth is replaced. The earth should be very firmly trod to these cuttings, especially at the bottom. In heavy land or any likely to heave by frost, the row of cuttings should be either well mulched, or the earth should be drawn up to them in a ridge so as to entirely cover them, to prevent being thrown out by the action of the frost. They should be set as early in the fall as possible, after most of the leaves have fallen.—Farm and Home.

MAKING A FARM HOTBED.

The first spring work in the farm garden is making a hotbed. It will furnish fresh vegetables when they are a relish and cost comparatively little, for everything is at hand except the sash and that when once procured will last for years. The ordinary hotbed sash is six by three feet, a very convenient size, although any old sash will answer the purpose. Construct the frame as wide as the sash is long and as long as it is desired to make the bed. Have it 12 inches high at the front and 18 inches at the back. About the 1st of March, haul out a few loads of fresh horse manure which has begun to ferment and place it in a square flat pile. In a few days when it has begun to heat quite violently, fork over, shake it out well and throw out all frozen lumps. Make into a bed at least 1½ feet thick and extending a couple of feet beyond the frame all around, treading it down firmly. Manure thrown loosely together will heat rapidly for a short time and then become cold, but when it is made comparatively firm, it will give forth a gentle heat for six or eight weeks. When the bed has been prepared place the frame upon it and bank it up well to the top with manure.

It is now ready for the soil. Use light garden loam which has been prepared the fall before. This had previously been placed in a heap and covered with manure to keep it from freezing, so that it can be had when wanted. Neglect of this item may cause some delay in making the hotbed, for the ground is usually frozen March 1st and it is difficult to procure soil from the open ground. Place five or six inches of earth on the manure, levelling and fining with an iron-toothed rake; then put on the sash and leave the bed alone for a few days before planting the seeds. If the seeds are put it at once the manure may

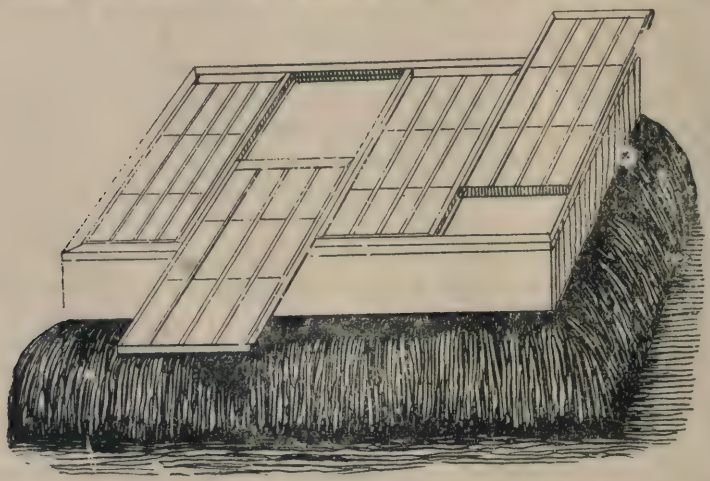


FIG. 735.—HOTBED.

become so hot that the tender germs will be destroyed. About the third or fourth day, the heat will usually subside to about 80 degrees, then it will be safe to sow. Mark off in rows about four inches apart, scatter the seed thinly in the drills, cover with half an inch of soil, and pat the bed down over the rows with a board on the back of a hoe.

Radishes and onions do not need transplanting, but transplant tomatoes and cabbage once or twice before setting in the open ground, giving them more room each time. Also transplant lettuce when it gets its second or third pair of leaves. Set three inches apart each way and it will soon become large enough for use. Always keep the bed full. As soon as one crop is taken out put in something else.

Open the bed and let in fresh air when the weather will permit. As it becomes warmer the sash may be removed altogether during the middle of the day, but must always be replaced when it turns cool toward evening. When the water begins to gather on the inside of the glass, it shows that the air is getting damp and heavy and if not changed the plants will smother, or the temperature will get too high; but always avoid letting in a cold draught directly on to the plants. Water sparingly in cold weather and never when the sun is very bright, for the drops of water on the leaves under the glass act as a lens and burn the leaves so that they will turn brown. For this reason in bright weather the watering should be done either in the morning or evening. If too much water is given the bed will become soggy and dead and the plants will turn yellow and cease to thrive. To avoid this I let the bed become quite dry before watering and then give it a thorough soaking. On cold nights or in stormy weather the glass should be covered with matting or boards, or even hay or straw, to keep the temperature from falling too low. A well managed hotbed will more than pay any family for the trouble. Once enjoyed it will be made every spring. It will require a little attention every day, but the pleasure of having early vegetables will be an ample reward.—American Agriculturist.

Drainage in Flower-Pots.—Although all persons are familiar with the fact that the flower-pot must have a hole in the bottom, very few understand why it is necessary that the water should be allowed to escape. The usual thought is that water is essential to plant life. To some extent no plant could live in thoroughly dry earth,—at the same time atmospheric air is of quite as much, if not of more, importance than water, and the change of air is as neces sary for the roots of plants as for human beings. Air in the earth in a flower-pot soon loses its life-giving powers, and has to be changed for fresh air. Watering accomplishes this,—it drives out all the foul air, and then after the water passes away, a new supply of air takes the place of the water. In this way continual watering thoroughly aërates the soil. A plant in a flower-pot which seldom needs watering, is in a bad condition.—Meehans' Monthly.

Fig 736.

THE GREEN MOUNTAIN GRAPE.

This grape is one of the new plants which we are sending out to our subscribers this spring, on certain conditions. It is not yet much known or tested in Canada, so in the meantime we will simply give the words of Professor E. S. Goff, in "Popular Gardening," 1889, concerning it :—

Among the very promising varieties soon to be introduced to the public is the Green Mountain, a very early greenish white grape, first brought to notice by Mr. James M. Paul, of North Adams, Mass. I have fruited this grape for the past two seasons ; it ripens about with Champion, while its quality ranks among the best. The vine is vigorous and quite productive, bearing medium-sized, not very compact bunches, of which the berries are a little larger than those of the Delaware. The flesh is quite free from hard pulp, and entirely free from harshness or foxiness, and its flavor is very sweet, with a slight inclination towards the vinous. I must pronounce it the only grape thus far tested that ranks first both in earliness and quality.

THE PEERLESS APPLE.

THIS APPLE is a native of Minnesota, a supposed cross between the Duches of Oldenburgh and the Tolman Sweet. The seeds were sown in the year 1867, and of them many succumbed to the cold of that State—but this survived the best of several others of like hardiness. We show our readers the cut, by favor of the introducer, Mr. O. F. Brand. He thinks it hardier than even Wealthy. He states that the tree is very productive, and the fruit well colored, and of good quality.

FIG. 737—THE PEERLESS.

The Garden and Lawn.

THE CACTUS HOBBY.

N eminent writer has said "everybody should have a hobby because it individualises one," and amongst the various hobbies none can give purer pleasure than the cultivation of fruits, plants and flowers. The CANADIAN HORTICULTURIST is doing a grand work in disseminating information in this direction, and as its influence is rapidly increasing it must tend to largely develop the resources of our beloved Canada, and the health, wealth and comfort of our people. And while instruction in fruit growing is the special mission of this Journal, it is pleasing to see that the æsthetic side of our nature—the love of flowers—is not neglected. The home, be it ever so humble, surrounded by carefully tended plants, a vine growing over the porch, and flowers in the windows, is an evidence of loving hearts, kindly dispositions and home comforts. Children raised in such an atmosphere are likely to be good, honorable men and women; vice and crime are not generated amongst flowers.

Amongst the special hobbies that have existed in former times, every one will recall the tulip mania in Holland when people went almost crazy over these beautiful flowers, until the Government deemed it necessary to interfere and limit prices.

Orchid growing has been, and is still, a good deal of a craze, but these can only be cultivated by the wealthy, and are, therefore, restricted to that class. About 1830, we are told, there was quite a cactus craze in England, and high prices paid by wealthy amateurs for rare species, but it died off, and until the past few years in America cacti were little sought after, but this hobby is at present very rapidly growing. Cactus societies are in existence and being

formed in various parts of the United States. Collectors are numerous, and extending their search into more distant and formerly inaccessible districts, discovering new and rare varieties, and, as demand brings supply, all excepting the rarest are to be had at very moderate prices, and here is where the advantage arises: anyone with a love of these curious, wonderful and beautiful plants, can indulge his or her hobby at a trifling expense. When a number are interested by the exchange of cuttings or plants, nice collections can soon be acquired at a small cost. I know of a large number of beautiful collections in

FIG. 738.—CACTI IN MEXICO.

Ontario, but the owners are seldom known to each other, and as articles or discussions in the columns of the CANADIAN HORTICULTURIST would tend to draw them out, I will be pleased, with your permission, in future numbers to try as an amateur to give some information on the different classes and varieties, methods of culture and management, insect enemies and diseases, which may, I trust, assist in encouraging an interest in these wonderful specimens of plant life.

Yours, etc.,

CACTUS CRANK.

THE DIERVILLAS, OR WEIGELAS.

THE Diervillas, or Weigelas, are shrubs of erect habit when young, but gradually become spreading and drooping as they acquire age. They attain a height of from four to six feet and as much in breadth. The funnel-shaped flowers are produced in the greatest profusion during the months of May and June, the precise time depending on the season as well as the situation in which the plants are growing. The individual flowers are quite large and of all intermediate shades and colors, from dark crimson to pure white. The leaves are oblong, ovate, acuminate in shape, and, with the exception of a few varieties, of a bright green color.

All of the species and varieties are exceedingly ornamental, and many of them should be found in collections of ornamental shrubbery, as they are admirably adapted for single specimens on the lawn, as well as for grouping or massing with other shrubbery.

As the Diervillas are perfectly hardy and of vigorous growth, they will do well in any soil or situation, but to enable them to do their best should be given one that is deep and moderately enriched. While the shrubs are small, grass or weeds should not be permitted to grow around or near them, and occasional top dressings of good stable manure will be decidedly beneficial. This should be applied in fall. The Diervillas produce their flowers on the wood of the preceding year's growth, so they should not be pruned until the flowering season is over, when the old wood may be shortened to promote the growth of the new which is to bloom the following season, but the branches should be reduced only enough to keep the shrubs in good shape, as it is very desirable to preserve the natural habit of growth as far as possible.

FIG. 739. — DIERVILLA OR WEIGELA ROSEA.

Propagation is readily effected by cuttings, which will grow if taken off in the autumn and planted in a nicely prepared border. As good specimens can be procured at very moderate prices, I know of no reason why they should not be more rapidly disseminated among our amateur cultivators.

There is in cultivation a considerable number of varieties, from which I have selected the following as the most desirable, although a dozen others could be added, and very justly, too :

D. arborea grandiflora. Grows about six feet in height and is a very vigorous-growing, large-leaved sort, with creamy-white flowers, which gradually change into pale rose. It blooms in July, about two weeks later than the others.

D. amabilis. Is commonly known as the Lovely Weigela. It grows about five feet in height and is most distinct and beautiful. It blooms during the month of June, and during that time the beautiful, large, pink flowers are produced in such profusion as to almost cover the entire shrub.

FIG. 740.—DIERVILLA, OR WEIGELA ROSEA NANA,—VARIEGATED-LEAVED WEIGELA.

D. floribunda, the free flowering Weigela, grows about five feet in height. It blooms during the month of June, and the pendulous flowers are of a deep crimson color.

D. rosea. The rose-colored Weigela is an elegant, compact growing shrub, with fine rose colored flowers, which are produced in the greatest profusion during the months of May and June. This shrub was sent from China by Robert Fortune, to whom we are indebted for many valuable plants and shrubs, and it is considered to be one of the finest of his introductions. It grows about six feet in height. Fig. 739.

D. rosea Desboisi resembles rosea in all respects except in the color of its flowers, which are of a deep rose One of the darkest and best varieties.

D. rosea var. nana foliis variegatis is the variegated dwarf Weigela. It is a most beautiful shrub, with rosy-pink flowers, which are produced in the greatest profusion during the month of June. The foliage is most handsomely variegated, having a clearly defined silvery margin, which stands the sun well and places it as one of the best variegated shrubs in cultivation. Fig. 740.

D. rosea var. Kosteriana foliis variegatis. Koster's Weigela is a very choice and rare shrub of recent introduction. It is of dwarf, compact growth, with deep rosy-pink flowers, and its foliage is most beautifully margined with golden yellow.—Vick's Magazine.

A WILD FLOWER GARDEN.

Anyone who has planted and cultivated flowers in neatly laid out beds, or carefully planned ribbon borders, is aware of the amount of labor and constant attention necessary to produce the desired effect. To those who cannot give this care, the "Wild Garden" presents a substitute, which, for its unusual and varied effects, for cheapness and the small amount of labor necessary for its construction, has no rival. "Wild Garden Seeds" are a mixture of varieties of hardy flower seeds, and can be bought at a much less price than when sold in separate packets. No one who has not seen such a bed can form an idea of its possibllities, the different seasons of bloom insuring something new almost every day. They are particularly adapted for the cemetery, or for the ornamentation of public parks, church yards, etc; also for sowing alongside of fences and on untidy, bare spots of ground, which are so frequently found about almost every place in the country, which, if properly cared for and kept free from weeds, will produce more flowers during a season than are found in many of the best cultivated gardens. As there are many biennial and perennial plants among them, they will last for years with but little care. Many of the most showy varieties can be transplanted to vacant spots in the flower border, and add much to its attractiveness through the entire season. They may be sown broadcast or in drills. The drills should be one foot apart.

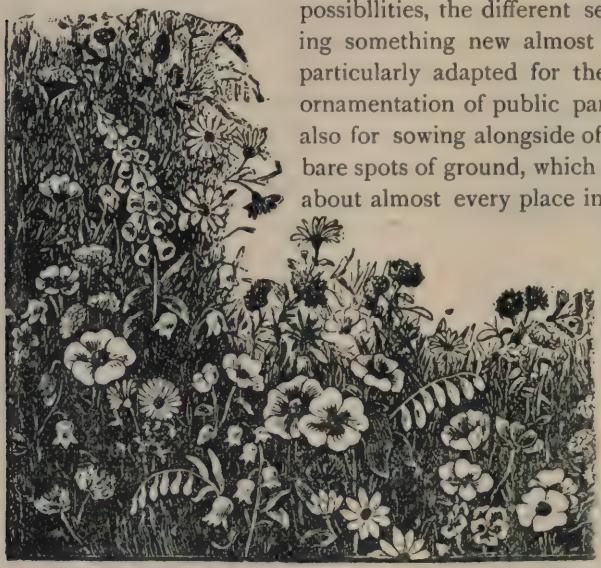


FIG. 741.—WILD FLOWER GARDEN.

Toronto. J. A. SIMMERS.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

IRRIGATION.—On page 15 the statement is made that "in a dry season it would be desirable to apply at least one inch of water once in a week or ten days. This would require about 800 barrels of thirty gallons each." For what area some one asks. Mr. Beall writes in reply, "for an area of one acre."

THE NEW BOOK ON TOMATO CULTURE.—This excellent work is by S. H. Mitchell, St. Marys, a veteran market-gardener and seedsman, who has had long experience in growing tomatoes. This book is now being published in serial form by the Ontario Fruit Growers' Association in the columns of this journal, and afterward it will be published in book form. We call the especial attention of our readers to this valuable publication.

NEW AFFILIATED SOCIETIES.—Waterloo has just organized a large Society, with Mr. James Lockie president. Brampton has organized with 63 members, and so the numbers continue swelling. As all the members of these new affiliated Societies are also members of our Association, and entitled to our Journal and report, we find that we must largely increase the number of copies printed. January and February numbers of '95 have already run short, and new members henceforth will begin with March number. However, in place of the missing numbers, we beg them to accept an entire back volume of the Journal, hoping it will make up for the deficiency.

A SUGGESTION to our affiliated Societies. Since we are mapping out fresh lines of work, an interchange of ideas will be useful. We suggest that the Board of each Society should meet at an early date and decide upon what

package of bulbs or plants shall be distributed by the local society. This should contain several named varieties of some one flower, as tuberous begonias, or gladioli; because they would all come in bloom about the same time. Then in blooming season an exhibition of these blooms, named, could be held in some hall, with music, and honorary awards made for best collections. An address or essay on the Cultivation of the flower exhibits, might be given, and the occasion be designated a Gladioli Exhibition, or Gladioli Exposition, etc.

If necessary, the Societies may retain the subscription fees for the expense of these bulbs, and pay their fees to our Association when their grant comes next August.

PRESIDENT BIGELOW, of the Nova Scotia Fruit Growers' Association, gave a very able and interesting annual address. Among other things, he called attention to the great importance to the Province of the fruit industry, as follows:

In reviewing the history of this Association for the past year, we have great reason for thanksgiving to Divine Providence for an abundant crop of superior fruit and a great advance in scientific fruit culture in this Province. The apple crop may be safely estimated at over three hundred thousand barrels of the best marketable fruit ever grown in Nova Scotia. We shall ship to London alone over two hundred thousand barrels and with an abundant crop of plums, small fruit and berries, the cash value of the fruit crop of 1894 in N. S. may be safely estimated at over one million dollars, and as there is no outlay for raw material or plant power or machinery in this product, the revenue is a direct gain to the fruit grower and an immense benefit to the Province.

. . . . . .

To form some idea of the growing importance of fruit culture in N S., I have compiled the following synopsis from the most reliable sources:

1. Annual value of fruit crop, above $1,000,000.
2. Annual additional value to the permanent wealth of the Province by young orchards, 5,000 acres, at $200 per acre, $1,000,000.
3. Value of orchards now bearing, 7,500 acres, over $500 per acre, $3,750,000.
4. Number of men employed in fruit culture, 6,000.
5. Number of men employed in barrel and box factories, nurseries, fertilizers and other industries required by fruit culture. 3,000.
6. Freight paid for fruit to railroads, $60,000.
7. Fruit paid steamboats, $200,000.

HORTICULTURAL INSTITUTES are, we hope, one of the developments of the near future. Horticultural societies are being formed in affiliation with this Association, the object of whose existence, instead of being the conferring of prizes on a ring of professional exhibitors, will distribute horticultural literature, new seeds, bulbs, plants and trees, and have meetings for hearing lectures on horticulture, and discussing the same. Here is the opportunity for holding Institute meetings for the express purpose of studying about fruits and flowers. For instance, Prof. Hutt might give a lecture on House Plants, Prof. Panton, an illustrated lecture on Fungi, and various members of our directorate could give practical addresses on Fruit Culture. Possibly the Legislature would give to the O. A. C. at Guelph, or possibly to the Board of Control of Fruit Experiment Stations, or to our Association, a special grant towards carrying out such work. Something of this kind is being carried out in New York State. The New York

State Legislature last year passed what is known as the Experiment Station Bill, appropriating $8,000 to be expended in Western New York by Cornell University for the benefit of horticulture. The fund was to be used in experiments, investigations, in publishing the results, and disseminating information by means of lectures or otherwise.

Last December Prof. Bailey conducted a four days' School of Horticulture in Chautauqua County, at which about sixty fruit growers were enrolled. The first half-day was devoted to the subject of How plants live and grow, with microscopic demonstrations; another half-day was given to the evolution of plants; one to the theory of tillage and productivity of land; another to fungi, with stereopticon views. Each session began with lessons of observation. The interest was keen, and quite a number wrote on the examination at the close.

Surely we can profit by the example of our neighbors. If the fruit industry is one of the foremost in Ontario why should it not receive every possible encouragement from our Legislature?

MEETINGS OF HORTICULTURAL SOCIETIES.

Now that we have so many affiliated Horticultural Societies, any hints that will aid in making them successful will, no doubt, be widely appreciated. The following is from the American Gardening:

"As regards the lines on which the work is to proceed, regular meetings are a necessity, say once a month, with a lapse during the summer season; meetings of greater frequency we do not advocate, as attendance at at them becomes irksome to a degree, and once that feeling intervenes, interest wanes and stagnation results. These meetings should be arranged for previously, at the beginning of the season, and a programme for at least six months promulgated. On each night some special subject should be placed for discussion, or a lecture secured, and in the latter case comments from the members invited afterward. Encouragement must be the motto—not display,—therefore, invite free interchange of opinion, listen to all, and ridicule none; many a promising man, with perhaps an over-sensitive nature, has forever held his peace after a first attempt, by the want of consideration shown by those who ought to have known better.

Induce the younger members to mount the rostrum and present the paper for the evening; by this means much good will be done, not perhaps so much in what is imparted, as in what has been learned in the preparation for that occasion. This is no fancy sentiment, but a fact which has been repeatedly expressed to us by members of many associations in which we have been interested. Another phase: At these monthly meetings the members could be encouraged to bring up meritorious examples of cultivation, new plants or varieties, or well-grown fruits and vegetables, and thus by comparison of results and discussion of methods, develop the art in which all are interested; This gives rise to a spirit of emulation.

Question Drawer.

Ashes for Fruit Trees.

696. SIR,—I have a large heap of ashes, probably fifty loads, which has been left from making potash. It has lain some thirty years, but is still so strong that grass does not grow upon it. Would it pay to haul it upon an apple orchard, and if so, what quantity per acre? Please answer through THE HORTICULTURIST.

A SUBSCRIBER, *Pickering.*

Leached ashes, such as our correspondent speaks of, has lost its most important element, namely, potash, which is one of the most important fertilizers for the fruit orchard. Still there is probably a small portion of this element yet remaining, and a certain amount of lime also, which would be of some benefit as a fertilizer. If the land is stiff upon which it is proposed to put these leached ashes, the mechanical effect will be particularly beneficial. In any case we believe it will pay our correspondent to cart these ashes and apply them to his orchard. It was a great mistake to allow them to remain thirty years without being applied to the land. Few of our Canadian gardeners seem to appreciate the excellent results which are obtained by a liberal application of wood ashes to the land for almost any crop. As to quantity, we usually advise about fifty bushels per acre of unleached ashes. Two or three times that quantity of these leached ashes would do no harm.

Irrigation.

697. SIR,—I notice that you answer questions free. I have a large garden here of light sandy soil in some parts that will continually dry up at every season in spite of all kinds of manure put upon it. I am growing a good many small fruits and am putting in waterworks and hose. Last season and this I am giving the land a heavy dressing of hardwood sawdust which was used as bedding for chickens, cow and horse, and had been kept under cover. I have also put on well-rotted manure for seven years continuously. I know that the want of water is the great difficulty. A part of the land is low and flat and is under-drained. The subsoil is white clay fifteen inches below the surface. Now I want to irrigate the sandy part where the stuff all wilts in August.

F. W. PLANTE, *Wiarton.*

It would be a great boon to fruit growers if a simple system of irrigation could be planned which would be efficient and not too expensive. We will be glad to receive the experience of any of our readers under this heading.

Dahlias.

698. SIR,—During the last two summers my dahlias have been very unprofitable, yielding very few blooms. The buds would turn black, die and drop off. On a dozen extra strong plants I had not twenty good blooms. Can you give the cause and suggest a remedy?

W. A. BROWNLEE, *Mount Forest, Ont.*

Reply by Webster Bros., Florists, Hamilton, Ont.

We have found that the dahlia buds fail most upon plants that are exposed

to the full action of the sun. It is better, if possible, to plant with a northern exposure, or where they will be shaded for part of the day. Use a heavy mu ching, water occasionally, syringe freely in the evening during the hot time when there is little or no dew. We do not think the buds fail after the weather begins to cool, and until then dahlia buds are poor at the best.

Propagation of Carnations.

699. SIR,—Kindly tell us also how carnations are propagated from cuttings.
W. A. B., *Mount Forest.*

Reply by Webster Bros.

Carnations are propagated by cuttings inserted in a sand bench, (they will root in a pot) and kept moist. They root most quickly with a bottom heat, but it is not a necessity. November to March is the best time for the operation.

The Oyster-Shell Bark Louse.

700. SIR,—Is the sample of bark louse enclosed injurious to the tree, and if so, what is the best remedy?
R. J. BISHOP, *Round Hill, N.S.*

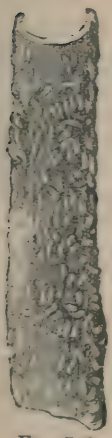


FIG. 742.

The pieces of bark enclosed are covered with scales of the Oyster-shell bark louse, something like the picture, shown in the margin. The insect is by no means rare in Ontario, indeed some large orchards almost ruined with it. So small is the insect, that the owner is often perfectly unconscious of its presence until his trees cease to grow, and begin to show limbs besmeared with the scales. These remain where they are during the winter months, but, about the 1st of June, the young lice hatch out and begin hunting about for tender portions of bark, where they can insert their beaks and begin sucking the juices. Since these increase nearly one-hundred-fold yearly, it is plain that they soon become a serious pest.

In Fig. 742, 2 represents one of the young lice as shown under the microscope, 3 one after remaining in one place for a few days, 4 a still farther change, while 5 and 6 show the louse as it approaches maturity; 7 shows the scaly covering secreted toward the end of the season, under which it lives and matures. By the middle of August this female louse is little else than a bundle of eggs. To destroy them, the bark of the trees may be scraped in winter; but the most effective remedy is a thorough spraying with kerosene emulsion, about the 1st of June. The scraping will expose the trees more fully to the action of the spraying liquid. In the absence of spraying apparatus, the trees may be scrubbed with the emulsion, or with a strong solution of washing soda and water.

Apple Trees and Dwarf Pears.

701. SIR,—In planting an apple orchard, would it pay to fill in between the standards with dwarf apple trees?

R. J. B., *Round Hill, N.S.*

No, we would not advise such planting, unless you are crowded for space. Dwarf apple trees live a long time and would soon interfere with the standards.

Pruning Plum Trees.

702. SIR,—When is the best time for pruning a young plum orchard?

R. J. B., *Round Hill, N.S.*

A young plum orchard should be pruned during the first mild weather of spring, before the buds begin to push. Summer pruning, to induce fruitfulness is sometimes resorted to in cases of an older orchard.

Fertilizing Fruit Trees.

703. SIR,—Would it be a good plan to use a small quantity of bone meal in each hole at the time of planting young fruit trees?

R. J. B., *Round Hill, N.S.*

This manner of fertilizing would be of little or no use. The little tiny rootlets, as they grow outward and into the soil, are the ones that take up nourishment in tiny particles, not in bulk. The best way, therefore, of fertilizing, is to carefully incorporate the fertilizers with the soil, and the little rootlets will search after it.

Sowing Seeds of Fruit Trees.

704. SIR,—Will you kindly inform me, through the HORTICULTURIST, when is the best time to plant apple, pear, plum and peach seed?

ALBERT MORDEN, *Vernon, B.C.*

Apple and pear seeds may be sown in the fall, when fresh and plump from the cider mill. Many persons simply sow the pomace thickly in wide drills in the fall, and cover with about half an inch to an inch of earth. Most of the seeds will grow the following spring, and are transplanted at the age of one or two years into regular rows. The seeds may also be kept in sand until the following spring, and then sown. It is usual to splice-graft yearling apple and pear seedlings. They are pulled in the fall, kept in green sawdust, and grafted in the winter season.

Peach and plum pits should not be allowed to become very dry. The

usual plan is to dig them thickly in a bed of earth in the fall—so that the freezing may assist in cracking the shells. Then in spring-time they are dug up and the cracking completed, one by one, with a hammer and block. The seeds are then sown in prepared ground about the time of planting Indian corn, or somewhat earlier.

Ashes for Strawberries.

705. SIR,—Would you please tell me, in the HORTICULTURIST, if ashes is a good fertilizer for strawberries?

G. S. SPAFFORD, *Warkworth.*

Yes, especially on sandy soil. The potash of wood ashes is an excellent fertilizer for all fruit trees and fruit plants.

Kentish Fillbasket.

706. SIR,—Could you tell me anything about the Kentish Fillbasket? What are its good points?

ISAAC GRAHAM, *Talbotville, Elgin Co.*

This is an old English fall apple, of great size, and considerable value for cooking purposes. It is a good market apple, and the tree is fairly productive. We do not think, however, it is generally considered as valuable as Gravenstein or Blenheim Orange, of about the same season. In our reports of apples adapted to the various sections of Ontario, no one seems to recommend this apple for the commercial orchard. We should be glad to hear the opinions of our readers upon its merits.

Time of Pruning Maples.

707. SIR,—Your Journal should be in the hands of every fruit grower—for to grow fruit properly we need all the information we can get. When is the best time to prune sugar maples? I propose to do it when the buds are bursting, and then paint the wounds with hot coal-tar.

W. L. SEARLE, *Clinton.*

Probably a better plan would be to prune soon after the fall of the leaf in autumn. The cut surface would then dry up before spring, so that little if any bleeding would follow. A coat of paint should be applied to all large wounds.

Care of Fruit Spurs.

708. SIR,—I notice apples are often gathered before they are ripe, and the fruit spurs for another year, broken off with them. In such a case how can the fruit grower expect a full crop till new fruit spurs have grown? W. L. S.

There is no doubt that most fruit growers are very thoughtless in this respect, and many do not even observe that the spurs along the branches have fruit-bearing buds for next year, and they often destroy them by careless pruning.

Salt as Top Dressing.

709. SIR,—Please inform me what benefit is salt sowed upon the land in the spring, and which soil is most benefited by it, gray sand, black sand, or clay. What quantity should be used per acre, and what time in the spring should it be applied? Would you sow it on wheat and oats, and timothy and clover meadows? Would it be better to mix it with land plaster for the meadow?

THOMAS E. QUICK, *Leamington.*

It has long been a puzzle as to the reason of the evident good effects which often result from top dressing of salt along with wheat and other crops, because it is not an element entering into the composition of the vegetable structures of plants or their products. Besides, when applied too liberally it destroys vegetable growth. It has been found, however, that salt acts indirectly, affecting the decomposition of substances alraady present in the soil, and setting free some things which are needed by the plants. Common salt, says Storer, displaces lime first of all, then magnesia and potash. It must be applied sparingly, when there are no young sprouts at hand to be injured. As to quantity, from one to two hundred pounds per acre has been found to give the best results with the wheat crop. We shall be pleased to hear the experience of any reader with salt as a fertilizer.

The Windsor Bean.

710. SIR,—Could you give me some hints as to the growing of the "broad" or "Windsor" bean, as we have not been successful with it?

DEOFLA, *Hamilton.*

The English or Broad bean is hardy and may be sowed as early in spring as the ground can be got in good condition. In England a common plan of sowing is in double rows 9 inches apart, and a space of 30 inches between; but the common American plan is in drills 4 feet apart. The seed is sown 2 inches deep and 4 inches apart.

Unproductive Trees.

711. SIR.—I have in my orchard some fine looking, healthy, F. B. Pears, Spy apples, and large blue plums (don't know name), which have been planted 16 or 17 years and yet produce no fruit, though they blossom profusely every year. They have been fairly well pruned, and mulched with chip dirt, manure, and occasionally some wood ashes put about them. The pears appear to blight, a sort of rust fungus attacks the fruit while young and causes them to crack open and fall off, the leaves are also affected in the same way. The plums, as soon as they are nicely formed, fall off; and the Spys, though they don t appear to blight, yet they do not bear fruit? Now, sir, if you could give me a cause and a remedy for all this, I am sure I would be very glad indeed.

B. F. QUANTZ, *Stroud (near Barrie).*

Probably the fungi which cause rust and blight are at fault for the unfruitfulness of these apple, pear and plum trees. We would advise our correspondent to give a faithful trial to the fungicides given in Prof. Craig's table, which we publish in this number.

Pruning.

712. SIR,—When is the proper time to prune, and do pears require much pruning, and do they require iron filings about them? B. F. Q.

Pruning of the apple and pear may be best done during any of the mild days between the fall of the leaf in autumn and the swelling of the buds in spring. Iron filings about a tree are not *necessary* in any case, but as the air acts upon them, causing rust or oxide of iron, a useful fertilizer is provided.

How to Prevent the Ravages of the Onion Fly.

Reply to question 684.

After twenty-eight years' experience, and trying about as many remedies for the Onion Maggot, I have found the following the most effective, in fact, I have never known it to fail when properly applied :

Procure some perfectly dry, fine soot, sow sufficient of this broadcast to thoroughly dust the plants. Apply very early in the morning before the dew is gone, or immediately after a rain, so that the soot will stick to the plant, thus preventing the fly from depositing its eggs in the young growth, as it seems to have an abhorrence of the soot and will not come near it. The first application to be made when the young onions are about three inches high ; four applications in four weeks, one each week, I have always found ample. In very showery weather, apply oftener.

"*Inglewood*," *Hamilton.* W. HUNT.

Open Letters.

Experience in 1894.

SIR,—The frost and drouth of last spring and summer reduced the strawberry and raspberry crops to about one-quarter the amount we had the preceding year. We would have lost all our strawberries had we not thrown straw over the rows when the plants were in blossom, thus saving them from the last two heavy frosts. Our apple crop promised to be very heavy, but the fruit dropped off until very few apples were left, but they were of good quality considering the unfavorable season. Our cherry crop was good and there was no black knot upon the trees. Our young strawberry plantation did well, considering the drouth. We kept the weeds out and the ground well pulverized on the top, and we even took the trouble to cover the runners as they grew. Had we not done this, our chance of a crop next year would be poor. When the fall rains came, those plants just pushed ahead and went into winter quarters well rooted, although the tops were not large. In November we gave them a top-dressing of ashes and lime. The object of the latter was to sweeten the land, because we believed it somewhat soured on account of the presence of a great deal of sorrel. Then we mulched them with long coarse manure. The Smith's Giant raspberry and Michel's Early sttawberry came to hand from the Fruit Growers'

Association in first-class condition, and I will have seventy-five young plants to set next spring. I got one hundred Woolverton strawberry plants from Mr. Little last spring. They are good growers, but shy runners. I intend planting them in check rows. I have planted a good many Williams, but they have not done well as yet. Yours truly,

ELLEN FEAR, *Elmira.*

A Peculiar Calla.

SIR,—When calling on Miss Kingston, of Port Colborne, recently, that lady drew my attention to a Calla Lily in her drawing-room, having a peculiar flower growth. The plant was in a very healthy condition. On observing it at a distance of a few feet, there appeared to be two spathes from the same stem, fronting each other. Upon a closer examination, one of the formations was seen to be less perfect in form and more irregular in outline, rather longer from base to point and having a small part of its extremity quite green. As the spadix was entirely absent, it must, I suppose, have been a leaf, although it had the exact color and velvety appearance of a spathe.

J. B., *Lindsay.*

A New Tool.

SIR,—With me the Fay's currant is only a moderate bearer, but is a luxuriant grower. The wood is too weak, and I have not yet been able to form the bushes into a handsome shape. Last year I allowed no shoots to grow more than five or six inches long, and pruned them, as well as the other currant and gooseberry bushes, three times, giving the last pruning immediately after the fruit was picked. As it was the first time I have pruned so often and so closely, I am awaiting the results. I am an amateur gardener, and only a twelfth hour amateur at that, for I am a retired tradesman, "who has seen his winter's sun twice forty times return." I have used a hoe—I call it a weeder—for nine or ten years, which anticipated what is now called the Crescent hoe. It is made out of two pieces of an old scythe blade wanting the back, two ends of which are rivetted together at an angle of a little more than 90°, thus (Fig. 743): A small piece of round iron, one-half inch in diameter, is rivetted to it and receives the handle (Fig. 743). I find it very useful among bushes of every kind, as well as in the strawberry plantation. I run it under about an inch below the surface. My soil is varying loam, and I do not know how it would answer in beavy soil. I find that a common garden rake is improved by fixing the head on a hinge, so that the teeth can move back and forth about 60°. The rakes now have the teeth about square off the back of handle, and made their best work when they are pushed from you at an angle of about 30°, behind a perpendicular line, and the hinge, when the rake is turned toward you, allows it to go as far on the other side of the line. Thus it grinds down lumps without raising them, while, if you wish to rake the refuse off the surface, a few minutes' work alters it to a stiff rake.

R. STEED, *Sarnia, Ont.*

FIG. 743.—BLADE OF HOE.

FIG. 744 —ATTACHMENT OF HANDLE.

GRAND DUKE.

One of the handsomest of all the European varieties ; has been sufficiently tried in this country and can be recommended as

THE

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THE GRAND DUKE PLUM.

WHEN once our ten Fruit Experiment Stations are in full operation we hope to be able to introduce to our readers only such new fruits as have been well tested at these stations, and proved to be worthy of notice. Our Plum station in the Georgian Bay district, at Clarksburg, will this year be furnished with a full list of varieties, and among them the Grand Duke, which is being introduced to Canadian fruit growers by the frontispiece in this number.

The Grand Duke Plum comes to us from England, and is thus described by the celebrated horticulturist, Mr. Thos. Rivers: "A seedling from the "Autumn Compote." A very large purple plum, ripening October 10th to 20th. Flavor very fine, and will prove a very valuable addition to late plums, either for the market or the private garden."

This plum has been grown largely by Mr S. D. Willard, Vice-President of the Western New York Horticultural Society, and in reply to an inquiry, he writes, under date 19th Feb., 1895: "Now as to Grand Duke plum. It so far has shown itself entirely hardy here, is a great producer of beautiful fruit, even and large in size, and which, by reason of its appearance and lateness of season sells well at outside prices, but the tree with us is such a poor grower in the nursery that it will scarcely become popular with the tree dealers, who, really now control the sales. And purchasers expect that every variety will show the same habits of growth as the Lombard, hence this, as well as many other valuable varieties will not be grown to any extent by nurserymen unless it develops better growing qualities elsewhere than here."

We have also to record the experience of a noted Ontario plum grower with this variety, viz., Mr. J. K. Gordon, of Whitby, who writes as follows:

"Though my experience in the growing of this plum has not been fortunate, I am inclined to regard it very highly. In 1888, on seeing favorable mention made of it by Messrs. Ellwanger & Barry, I received from them a few scions, from which I propagated several fine trees and grafts, but lost all of them but two grafts—one of which was inserted in a bearing tree, and the other in a small seedling which was protected by the snow—by the severe weather of December, 1892, and of January and February, 1893. The graft on the bearing tree, though apparently dead, also revived the following summer, and bore about twenty-five plums, which, though much shaded by surrounding branches, attained a good size and appearance, and a sample of them I exhibited in two of my collections of plums which took first prizes last year at the Industrial Fair at Toronto, and at which the judges, I was informed, regarded my Grand Dukes with much favor. In appearance, quality and size it resembles the Bradshaw somewhat, but I think its color, when grown in a more favorable exposure, will be darker than that variety. It ripened ten days before the Peach plum. Messrs. Ellwanger & Barry reported it exempt from rot, but I did not find it so, as several samples decayed very badly."

Mr. John Craig, Horticulturist at the Central Experimental Farm, Ottawa, writes on the 15th ult. as follows: '"I can give you very little in the way of personal experience regarding Grand Duke plum. It was discussed at the meeting of the Western New York Horticultural Society, Jan., 1893, where Mr. S. D Willard included this variety in a list of twelve best plums. It was included principally on account of its lateness and handsome appearance, as well as good quality. It was not included, however, in a list of the six best plums, offered by the same gentleman. The tree, in common with most other varieties of *Prunus domestica*, has failed at the Experimental Farm. I may say that it is being planted to a considerable extent, partly, I suppose, on account of judicious advertisement, in the Annapolis Valley, N.S. I have always been impressed with the handsome appearance of the fruit."

THE HOWEL PEAR.

In the October number of the HORTICULTURIST of 1893, I was much pleased to see a beautiful cut of the Howel pear. Having had a remarkable experience with it, I relate it for the benefit of others. About 30 years ago I planted 75 pear trees, mostly standards. There were about 15 varieties, and among them the Howel. In 10 years one half had blighted and died, in 20 years there were only five left and in 25 years every one was dead but Howel. It is still living and bears a full crop of perfect pears almost every year. The tree is not large, it has borne so very heavy that the growth of wood has been slow.

The soil is a gravelly loam; about three feet below the surface is a bed five or six feet deep of dry open gravel, just above the gravel there is ten to twelve inches of pretty stiff clay.

St. Marys. S. H. MITCHELL.

CANADIAN ASHES FOR CANADIAN FARMS.

HE agricultural papers are well supplied with standing advertisements of dealers in Canada hardwood ashes, and to us at a distance the question occurs, "Where do all these ashes come from?" Not from the marts of trade, because the fact that they are ashes indicates a large destruction of the products of the soil of Canada. They must come from the farms of Canada, but one can hardly understand why the Canadian farmers should thus sell for present advantage the fertilizing elements from their soil, which sooner or later they must buy back at a much greater cost. For although the Canada ashes cost the consumer at a distance far more than their percentage of potash is worth, we are told that the price received by the Canada farmers for these ashes from collectors is very low. We once bought a car load of these ashes, which analyzed much higher than the samples now offered for sale. They were delivered to me for $15 per ton. With the freight taken off, the actual price paid to the importer was not over $5 per ton, at which price the actual potash they contained was cheap enough. But if the importers were satisfied to get this price, for how little a sum must the Canada farmer have parted with the fertility of his soil, for the expense of the collection and storage and importation of these ashes must be very heavy. So I have figured out in my mind, that the Canada farmer got, not over two cents a pound, for the actual potash sold in his ashes, to say nothing of the lime parted with. Now when he finds his cultivated soil getting deficient in potash, as he invariably will, he must buy back that potash at four and a half to five cents per pound. At the same time the purchasers of the Canada ashes, as now sold at a guarantee of five per cent. potash, pay exceedingly dear for the whistle It looks to me like a hard bargain for the farmers on both sides of the line. The farmer on this side can buy his potash in the form of potash salts much cheaper than in the ashes, and the Canadian farmer is parting with his potash for less than half what he or his children must pay to get them back. In selling off these mineral elements of fertility, lime and potash, the farmer sells what he *must* buy back in some shape. We lose enough of the matters in the crops we sell, which is unavoidable, but when we add to this the sale of the products of combustion, by-products, that should go back to the land, we are burning our candle at both ends, and will reach the point of exhaustion sooner. Canada farmers as we look at it, cannot afford to sell these ashes at the price they are paid for them, and American farmers can buy their potash at vastly cheaper rates. Out of the difference the importers grow rich, while the farmers pay the bill. While we have had good results from the use of these ashes, we have become satisfied that we got the results at a far greater cost, even considering the value of the lime, than we could have gotten the same results by purchasing lime and potash in

other forms. When these things are transported by rail long distances the freight becomes the chief item of the cost. We once freighted ten tons of ashes at a cost of $80, and got 1,200 lbs. of actual potash (more than the average amount). We could have freighted 10,000 lbs. of potash in the shape of muriate from a nearer point for half the money. And this is the very point we would like to impress upon the producers of potash on the other side of the Atlantic, the immense saving of the cost of potash to the American farmer living far from the sea coast, by relieving him of the necessity for freighting so much useless material to get the potash he is after. They should send us more of the concentrated article, for the freight over the Atlantic is but a small part of the inland freight in very many instances.

W. P. MASSEY.

SOWING SEEDS IN DRY WEATHER.

A frequent source of complaint is the fact of seeds failing to germinate during long-continued dry weather, and it is very important that the gardener should always apply common-sense to his work, and not simply follow routine, for what will suit for one condition of *soil* or atmosphere would be unnecessary, or even wrong, for another. I will give a case to illustrate. About the 5th of May of 1871, I sowed a large patch of open ground with celery seed, and another with cabbage seed. The soil was in fine order, and the beds, after sowing, were raked—the celery with a fine steel rake, the cabbage with a large wooden rake, which covered the seed of each to the regular depth. The weather was dry, with indications of its continuing so, and after sowing had both the cabbage and celery beds rolled heavily, leaving, however, a strip of each unrolled, so that I could clearly show to some of my young men what the result of this omission would be if dry weather continued. Had a heavy rain fallen within a day or two after sowing, it would have compacted the soft soil and produced the effect of rolling it. But we had no rain for three or four weeks, and a burning hot atmosphere, passing through the shallow, loose covering of the seeds, shriveled and dried them up so that it was impossible they could ever germinate. This little experiment resulted exactly as anyone having experience in seed-sowing knew it must; our crop of celery and cabbage plants were as fine as need be on the rolled bed, while not one seed in a thousand of the celery, and not one in a hundred of the cabbage, started in the strips where the soil was left loose.—American Agriculturist.

Watering the Cyclamen.—Mr. Wm. Bacon, of Orillia, who wrote the article on the Cyclamen in our March number, writes: "When watering the cyclamen exercise care so that you do not let a lot of water settle into the clustering leaves and buds, as a constant dose of this kind would induce rot."

THE PLUM SCALE.

WE here repeat an engraving showing the plum scale from page 311 vol. xvii. It was there called Lecanium cerasifex, but scientists are not quite settled upon its exact name. This, it is observable, is quite distinct from the San Josè scale, described on page 64. Early in March we found some samples of this scale on a Glass seedling plum tree, to our sorrow, for it means another destructive insect enemy. Near Burlington instances have been found where it is very numerous indeed.

FIG. 745 — PLUM BRANCH WITH SCALE.

The number of eggs laid by a single mother is often from 1,000 to 2,000, so it is evident how rapidly they will increase if neglected. About July 1st they issue forth from the mother shell, and seek the leaves. Just before the fall of the leaf, the majority of them seek the undersides of the smaller branches, and thickly congregate together. It is estimated by Prof. Slingerland that there are 20,000 plum orchards in New York State, harboring millions of these scales. As this scale is a sucking insect, it can only be cured by contact with an insecticide, as for example, kerosene emulsion. For some insects the stock solution is diluted with 20 parts of water, for others with 9, but for this only with 4 parts of water. During the summer little can be done to destroy it, but when the trees are leafless, from November 1st to April 1st, the spray will be most effective. The work must be done thoroughly, as only those scales will be destroyed which are hit by the emulsion.

NUMBER OF TREES ON AN ACRE.

30 feet apart each way	50	10 feet apart each way	435
25 feet apart each way	70	8 feet apart each way	680
20 feet apart each way	110	6 feet apart each way	1210
18 feet apart each way	135	5 feet apart each way	1746
15 feet apart each way	195	4 feet apart each way	2725
12 feet apart each way	300	3 feet apart each way	4840

RULE.—Multiply the distance in feet between the rows by the distance the plants are apart in rows and the product will be the number of square feet for each plant or hill: which, divided into the number of feet in an acre (43,560), will give the number of plants or trees to an acre.

The Value of Trailing Growths for fences is not appreciated in this country as it should be. In Germany the Virginia Creeper is put to simple and effective use for this purpose in urban public grounds. A light, low fence is made of stakes and connecting wires; the Virginia Creeper is trained up each stake, and made to form graceful festoons between. Its employment in some such fashion would do good service on a place like the Cambridge Common, for instance, now a bare, unattractive expanse, having a sort of kinship with the New England rustic burying-ground. It is surrounded by a fence composed of unhewn granite posts with squared rails of wood between. Virginia Creeper, Japanese Ampelopsis, and perhaps other twining or climbing plants, might convert this old fence into a thing of beauty. In public parks the requirement for protection of the borders sometimes necessitates guards of wire and stakes along the paths. These are often great disfigurements, and their offensive aspect, in places where they seem to be required permanently, might be at least mitigated by the use of Virginia Creeper after the German fashion.—Garden and Forest.

GRAFTING THE GRAPE VINE.

GRAFTING grape vines is quite essential in vineyards where old or worthless varieties have by accident been raised. In a very short time the worthless vines can be made to produce an abundance of superior grapes. Grafting yields many other results that must be considered by every owner of vines. In testing new varieties of grapes the easiest and quickest way to do it is to graft them on the old vines. The new scions can be made to fruit the first year, and by the second year a good crop can be obtained. Many varieties that cannot be produced very readily from cuttings, will grow rapidly and successfully when grafted on to old vines. When properly performed the grafter's art can be made to increase the fruitfulness of the vines. Finally, and not the least important of all the benefits derived from grafting, this has been found to be the only successful way of fighting the phylloxera in California.

The method of grafting grape vines should be about the same in all localities, but the time of year best suited for the work naturally differs. Usually the spring of the year, from the first of April to the first of May, is the most suitable period for this work. The sap of the vines should be in rapid motion at the grafting so that the union will be made at once. The best wood of last season's growth should be selected for the scions. The cuttings should be selected early in the season, and then be buried in bundles until needed for grafting. Frost will injure them, and they should be perfectly free from all exposure to it. The scions should be about the size of a lead pencil, short-jointed, firm and of well-ripened wood.

FIG. 746.
GRAFTED VINE.

The grafting is usually done at or near the surface where the vigor of the old vines is the greatest. Cut the stock off square at about one inch and a half above the joint, or half way between two joints. If the stock is a large one make a slight split in it with the knife or chisel, press a wedge down to pry it open, and then insert a scion on each side. The scions must also be cut to a sloping point just below an eye. Push the scions down firmly, but be sure to make the bark of the scion and stock meet. When the wedge is withdrawn the bark of the two should meet firmly together, and if they do not the grafting is not a success.

If the grafting is properly done, and the union made perfect, no bandaging is necessary. This is only an excuse to cover up poor workmanship. Some light earth should be pressed firmly into the split, and all around where there is any opening This dry earth will prevent the graft from drying out. If there is any doubt about the work, a bandage of cloth and dirt after the old style can

be wound around the graft. To make graftings more successful, it is well to cultivate the stocks carefully beforehand so that a vigorous growth will be had at the time of grafting. The scions should also be strong, well-selected twigs, taken only from good stock that will produce a thrifty growth.—Rural Canadian.

IMPROVED METHOD OF LAYING OUT AN ORCHARD.

IN laying out land for orchard planting, the use of a wire marked with solder gives far more accurate measurement and is more time-saving than a measuring pole and stakes. A light galvanized wire is best, and the drops of solder that mark the distance required for the trees, or vines, should be prominent enough to be seen readily when the wire is on the ground. In taking the wire from the coil it should be unrolled, not pulled out from the end, as in the latter case the wire is more liable to take short kinks that interfere with its accuracy. About 100 yards is the limit of length of wire that can be readily handled by two men on fairly level land. On undulating land a third man will be needed at the middle of the wire. The ends of the wire are made fast to the middles of two short,

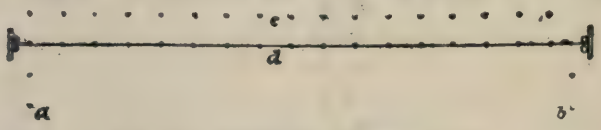


FIG. 747.—IMPROVED ORCHARD CHAIN.

stout sticks which serve as handles in moving the wire. When the wire is stretched on the ground for marking, it is held in place by pegs set against these handles. In marking off the orchard, the first step is to run a base line *a*, as seen in the sketch, along one side of the field. The wire is stretched tight and straight where the tree row is wanted, the handles are pegged down and then each solder mark has a peg put down beside it. The wire is then carried to the opposite side of the proposed orchard—if that be not more than a wire's length distant,—and again stretched exactly parallel to the bass line, *b*, and each solder mark pegged as before. This is a guide line, merely. The distance from the base line is not material, but it is material that it be exactly parallel. Now the actual work of laying off the orchard begins. The wire is stretched along the side of the field, at right angles to the base line, *c*, the first solder mark touches the first peg on the base line, the wire touches the corresponding peg on the guide line, is made tight and straight, fastened down, and a peg placed at each solder mark. Then the wire is moved down the field a peg, *d*, and the operation repeated. If all has been done with care and correctness the pegs will range straight both ways and any number of diagonals may be sighted, greatly to the pleasure of the lover of exact work.—American Agriculturist.

TOMATO CULTURE.

CHAPTER VI.

GROWING PLANTS FOR MAIN CROP.

Seed for main crop may be sown from two to five weeks later than the first early. Usually the largest quantity will be soon enough, sown the first week in April. At this season they can be aired more and may be sown somewhat thicker, but care must be taken not to sow too thickly. If they come up too thickly, thin them out with a bold hand ; always bearing in mind that one good plant is worth more than two or three poor, drawn ones, and will yield more profit. This lot of plants may be treated the same as the first early ones, only they may be planted out of the boxes directly into the open ground where they are to fruit. The boxes and pans that have been emptied when filling the forcing frames can be filled again out of this lot of plants.

If many plants are wanted for main crop several sowings of seed should be made up to the tenth of April. Out of the plants grown from seed sown in April, cold frames are to be filled. The frames may be prepared the same as those for the earlier plants except that they may be placed as close together as it will be convenient to work the glass, and no manure used. The objection to the use of manure is, that it causes the earth around the roots of the plants to crumble off when the plants are to be lifted ; and also when the roots of the plants strike a lump of manure the plant does not start readily.

The south board of the frame should be only ten inches wide; the soil should be very fine, all small stones or rubbish of every kind should be carefully raked out. The soil should then be packed down pretty solid. These beds should be prepared only when the soil is dry and in good working order. Take good strong plants out of the seed beds and dibble them in up to the seed leaf, eight inches apart each way.

Water moderately and cover close with sash as fast as planted, keep them close for about two days, until the plants are well started. If the sun is bright do not open them but shade the beds sufficiently to keep them from over-heating. At the same time remember that a heat of eighty or ninety degrees is not too much for them until they are rooted and started to grow ; growth should take place in two or three days.

The best, cheapest, and most convenient shade, may be made as follows : Take two pieces of pine seven feet long, and two inches square, nail on these pieces of lath 3½ feet long and leave one inch space between each lath ; also leave 5 inches at each end without lath, for convenience in handling. These will shade the beds sufficiently and at the same time admit sunlight enough to heat the beds in clear weather. They should always be taken off in cloudy weather. As soon as the plants are fully started, let them have all the sun and

open the sash to keep down the heat. Give air as required, aiming always to keep up sufficient heat to make the plants grow rapidly, and at the same time to give air enough to keep the plants from drawing.

CHAPTER VII.

VARIETIES OF SOIL AND THEIR PREPARATION.

The best soil for tomatoes is a rich, deep, sandy loam. The next best, is a deep, rich, gravelly loam, but if the gravel comes too near the surface, the crop in dry seasons will be light. Such soils are usually dry and well drained in their natural condition, and take in the heat of the sun more than heavy soils. Muck soils may sometimes grow good crops of tomatoes if well drained; but they are apt to grow too much vine, and the fruit does not set early and freely, so that the crop comes in late, and, consequently, is seldom profitable. Clay loam may be made in fair condition for a crop by good under-drainage, using three-inch tile, put in three feet deep and not more than thirty feet apart.

Heavy clay soils should be avoided, as they will not be profitable to grow tomatoes on. Those who have no other soil, and wish to grow good tomatoes for family use, should choose as dry a piece of land as they have, and mark out the size they require. Then draw on four square yards of medium fine sand to each rod of land, also a load of well rotted manure, and, if it can be obtained, a load of muck. Spread evenly over the piece, and work it in with a horse-cultivator, 8 or 9 inches deep; plow it up and work again with harrow and cultivator until the soil and other material is perfectly mixed. Use the same land every year, and work it a little deeper each year until it is worked 12 inches deep, adding more sand if necessary; about half sand on such a soil would not be too much when well mixed in.

But the question asked will be, will it pay? I answer yes, and pay well. The first crop may not pay; but it should be remembered that a piece of land so prepared will last any length of time, as the sand will not wear out or rot away. All that will be required after the first year is a coat of manure each season. And tomatoes can be grown on the same ground any length of time, and the plot will each year improve.

The cost of a rod prepared as above will be about as follows:—

5 yards of fine sand at 50c	$2 50
1 load manure, 50c., 1 load muck, 50c	1 00
Work, mixing to the depth of 9 inches	50
16 extra early strong plants	1 00
Hoeing and tending	50
	$5 50

The average crop should be about as follows :—

1 bushel extra early tomatoes	$3 00
1 " medium, " "	1 00
2 " late, "	1 00
1½ " green "	50
	$5 50

After crops will cost about as follows :—

Half a load of manure	$ 25
Preparing soil	25
16 early large plants	1 00
Hoeing, training and picking	1 00
	$2 50

Profit, $3.

Having chosen suitable soil for main crop, plow ten inches deep in the fall. Then, the following May, cultivate and harrow down smooth ; draw on twenty-five cords to the acre of good well-rotted manure ; spread and plow the manure under, six inches deep, two weeks previous to planting time, say about the middle of May. When ready to plant, harrow well till smooth. The harrowing will kill most of the weeds which will have started up after the plowing.

CHAPTER VIII.

PLANTING MAIN CROP AND PROTECTING FROM FROST.

When ready to plant, mark out the land with a hand marker ; set so as to draw straight lines five feet apart ; make the marks from north to south ; then, with a Planet Junior cultivator, with only a double moulding steel in the centre, or a light double mouldboard plough, turn out a furrow five inches deep, straight along the mark. This furrowing out should be done only just as wanted, so the soil will be fresh and moist for planting in. For planting, choose the *very hottest weather*. If the plants are prepared as directed, bright, hot, sunny weather is the best. Even though it may be quite dry, it is all right so long as the earth is moist where the plants are to be set. Avoid cold, wet weather, if possible. It is the worst weather you can have for planting ; the ground being cold and wet, and no sun to warm it up. It is better to defer planting a few days, or even a week, until you can get warmer weather. Wet weather will not hurt, if the weather is only warm enough. Do not water or shade the plants when set out, they are better without it.

To prepare plants for setting out, they must be watered sufficiently to wet all the earth as deep as the roots ; and the watering should be done three or four hours before the plants are wanted, so they will have time to drain. If put out

immediately after watering, they will be too soft and muddy. Boxes are best watered by dipping them entirely under water, sufficiently to cover the earth, and hold them under until the air stops bubbling out of them. Then lift them out and lay them on their sides to drain till wanted. To take the plants out of the boxes, use a small steel spade; the blade should be thin and without rivets four inches long, three and one-fourth inches wide at the bottom, and three and three-fourth inches wide at the top; with handle about two feet long. The bottom and two sides should be ground to a sharp knife edge. With this spade begin at one end of the box and cut out one plant at a time, with all the earth attached to it. If the plants are to be taken out of cold frames, knock the frames to pieces and commence at one end with the small spade; open up a face along the side of the plants, then run the spade down squarely on the other three sides; then run the spade in flat under the plant and lift it out. The lump of soil at the root should be about four inches square at the top and about three and a-half inches square at the bottom, and about five inches deep. If cut larger the earth will be too heavy to cling to the roots. Set them close together in a flat broad box, to be wheeled or drawn to the planting ground. When they are taken out to plant, care should be taken to avoid, as much as possible, shaking the earth from the roots. Set the plants in the furrow prepared for them, three feet apart. If the land is very rich, or contains considerable muck, set the plants three and a-half feet apart. Lay the plants down on their sides, with the tops leaning to the north. Now raise the plant partly up, and, with a hand hoe, pull in enough earth under the plant on the north side. Then drop the plant, no matter if it does lay on the ground, and fill the soil around the roots until the lump at the root is about one inch below the surface. Press the soil firmly around the roots with your foot and the work is done. An acre of land planted 5 ft. x 3 ft. will take 2904 plants.

As the above way of planting has not been practised by anyone (as far as I am aware) but myself, it is only right and fair that I should give my reason for the practice. *(To be continued.)*

St Mary's, Ont. S. H. MITCHELL.

Pickling Onions.—Take none but the small button variety, and select them as nearly one size as possible. First throw them into warm water; this will tend to fix the volatile principle, and prevent the eyes being affected while peeling them. As fast as they are peeled place in a strong brine, to which has been added a very little alum; this will shorten the fibre, rendering them very brittle, without affecting the taste in the least. Allow them to soak in this solution for twenty-four hours, then place on the fire and boil one minute. Another good plan is to throw them into milk and water as fast as peeled; from this they are drained and placed in a jar, pouring hot brine over them; cover up close, and allow to stand twenty-four hours, then drain and dry in a cloth, and place in cold vinegar containing a few blades of bruised ginger, some peppercorns, a little mace and horse-radish. Keep always covered with vinegar, cork or cover the jar close, and keep in a cool, dry place.

THE LEADING IDEA IN PLANTING.

IN any scene it is plainly a mistake to introduce plants which, however beautiful in themselves, contradict the leading idea. Instead of this, we should carry out the central thought in every possible way. If we have a natural ledge of rocks we can encourage native ferns to grow in its crevices, wild vines to trail over its face, and native shrubs and grasses to grow at its base, and thus emphasize its natural aspect and make an artistic picture at the same time. Where the surroundings of the ledge are rough, it may be the best practice to clear away only the inhospitable thickets of brambles and allow Nature herself to weave a tracery of vines upon the rocks, and encourage wild flowers to blossom among them. In planting our native trees in a natural landscape we should use them in such positions as they usually affect, not only because a willow will be healthy near the water while a chestnut will thrive on a gravelly hill, but because we are accustomed to see these trees in such places. Stretches of green turf always enhance the effect of trees, but where our object is to preserve as far as possible the wild beauty of an individual spot and bring out the idea of remoteness, the borders should be broken by capes and bays of foliage, and outstanding single

FIG. 745.—A VIEW OF THE HUDSON FROM ASHTON

trees and masses of shrubbery informally disposed. If the key-note here is solitude, retirement, the idea of escape from convention, nothing like formality or rectilinear primness should be permitted. This attempt to imitate the quiet of an unsettled neighborhood the English delight in producing in their great parks, through which one may drive for miles before reaching the castle with a refreshing sense of seclusion and unmolested nature. It is this idea which adds the final charm to the great beeches, with their wide-stretched arms, and the oaks which have remained undisturbed for centuries. They add significance and force to the idea of quiet permanence in an unvexed domain.—Garden and Forest.

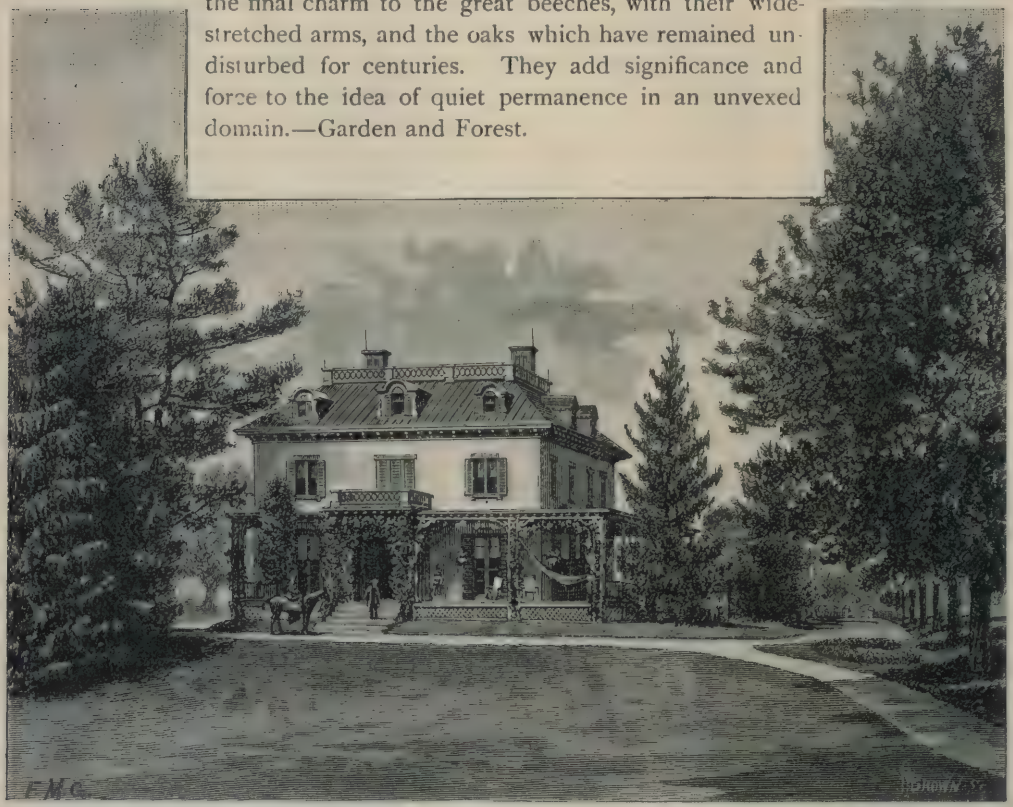


FIG. 749.—ASHTON, AT YONKERS, N. Y.

Distances for Planting.—Standard apples—30 feet apart each way. Standard pears and strong growing cherries—20 feet apart each way. Duke and Morello cherries—18 feet apart each way. Standard plums, apricots, peaches, nectarins—16 to 18 feet each way. Dwarf pears—10 to 12 feet apart each way. Grapes—Rows 10 to 12 feet apart; 8 to 12 feet in rows. Currants—3 to 4 feet apart. Raspberries and blackberries—3 to 4 by 5 to 7 feet apart. Strawberries for field culture—1 to 1¼ by 3 to 4 feet apart. Strawberries for garden culture—1 by 2 feet apart. Gooseberries—4 by 6 feet apart.

A MODERN SUBURBAN LOT.

ARGE places are not liable to be neglected. What we need is to have the almost universal small places made useful and attractive by true art. No place with a few feet of ground is too small to be improved and made to exert a pleasure-giving and refining influence. Too often we see a house in the centre of a lot, with neither tree, shrub, vine or other plant to indicate that the house and grounds do not belong to the highway. Good taste is not a difficult matter to acquire. Truth and simplicity are its foundation, but it does require a little common sense. Places are laid out with a view to their use and enjoyment.

With this in mind let us consider what are some of the principal features desirable in a small place. Let us imagine a small, inexpensive house upon an averaged sized suburban lot, and near its northern boundary, that as much as possible of available ground may be in one area on the southerly side of the house. The living rooms should be in the southern part of the house, on account of the warmth in winter, the pleasant southern breezes and the beauty of the western sky at sundown. The entrance is upon the north side. Should the ground slope considerably toward the south, the material excavated from the cellar is formed into a terrace, on which the house rests. A small plant-room, built out from the dining-room, is entirely enclosed in winter, but in summer the sashes are removed from the sides, and awnings fixed upon the parts supporting the roof, converting the place into a tea room, adorned with vine-covered lattices. On the east of the terrace is a flower garden enclosed by a low fence of spruce poles, covered with vines. On the lawn side of this are masses of shrubbery to break the monotony of the fence line. The garden design is a quadrangle. A straight path runs round it, eight feet from the boundary; of this space, six feet in width, is filled with all the old-fashioned flowers. The clear space within the surrounding path is a grassy lawn, in which a few beds are cut and kept filled with bright-colored plants, furnished from the border, the highest growing kinds being in the central bed. To relieve the flat effect of the garden, six pyramidal arbor vitæs are planted, one in each corner, and one in the centre of each long side. Their dark foliage gives fine contrast to the bright flowers, and in winter saves the garden from desolation.

The lawn runs up to the terrace, at the base of which are two or three masses of shrubbery, varying in height. Vines run over the terrace wall, partly hiding the stones. Except the lawn tennis portion, the lawn is modelled into gentle undulations. If an unsightly object in the neighborhood is obtrusively visible, the ground near the boundary in that direction should rise in a decided swell, be thickly planted with shrubs, and at their rear several poplars push

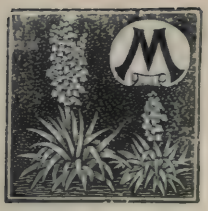
up their pointed heads, the whole forming a perfect screen. The turf of the lawn is mostly encompassed with bushy foliage, so planted as to form little bays, in one of which may be placed a covered seat that may be concealed from the house by an isolated mass of shrubbery, which arrangement adds greatly to the effect of distance. The shrubs are planted thickly together; the effect is generally better and more immediate. Thinning must be practised as needed. The tallest growing are placed next the boundary, the lower ones next, graduating them down to the creeping varieties at the very front. The sky line of planting varies; in some places high, in others low; in some thick growing, in others thin, but graceful; but altogether forming a harmonious whole. The laundry yard should be out of the general view. If necessary a lattice fence covered with Virginia creepers and honeysuckle would conceal it.

Such in general are a few of the principles which apply to the arrangement of the house and grounds of small places; and when such homes become nearly universal, the art of gardening will have accomplished much for the happiness of man.—Rept. Mass. Hortl. Soc.

Cannas grow best out-of-doors in summer, either in large tubs, pails or pots, or planted in the border. They require a large space for root room. They can be grown in the house in winter as easily as flowering bulbs. Put in five or six-inch pots, give good drainage, place in a warm window, and water freely, giving full sunlight. When the pots are filled with roots, shift into eight or ten-inch pots. They will bloom freely in these and may remain until spring when they should be planted in the border where they will get the full sunlight. They will recover their vigor and be ready to bloom next winter. The soil to pot cannas in should be very rich and light, one-half well-rotted manure is not too stroug for them, for they are gross feeders. Cannas like warmth, sunlight and moisture. Try some cannas in the window garden and you will not regret it for they will afford you great pleasure in the dreary months that are to come. The Star of '91, Madame Crozy and Crown Jewel are good varieties.

FIG 750.

CLEMATIS CULTURE.*



MY excuse for offering a few remarks on the cultivation of the Clematis is that, in my opinion, this class of plants does not receive the attention it deserves, for, considering its cheapness and ease of culture, I know of no plant that is as certain to give such a wealth of beautiful large blossoms every season, I cannot do better here than quote from the "Gardener's Chronicle." "Taken for all in all, the hardy varieties of clematis form the noblest and most useful of recent additions to out-door gardening. They are inexpensive, they are hardy, they grow freely, they adapt themselves to almost any condition, and may be made useful in an infinitude of ways. Their foliage is ornamental, they bloom profusely, and for a long period, their flowers have beauty of form, and beauty and variety of color, and even perfume is not wanting." And yet with all these qualities how few homes are adorned with these lovely climbers? Perhaps one reason is that it has been difficult to get information regarding them. A nurseryman' catalogue may contain six or eight with name, color and price given, but out of that number there may be, and generally are, two or three varieties or types different in habit, yet it seems to be considered sufficient to label them all Clematis. And yet in the same catalogue the roses will be carefully classified as Hybrid Perpetual, Tea, Noisette, Moss, Polyantha, etc. Messrs. Jackman & Sons, Woking, Surrey, England, the noted growers and hybridizers, have done more for the improvement and dissemination of the clematis than perhaps any other firm. By the introduction of a race of hybrids, of which Jackmani is the type, they at once placed the Clematis far ahead of all other hardy flowering vines; their classification is as follows:

1. MONTANA TYPE.—Climbing winter and spring bloomers, with medium-sized flowers in aggregated axilary clusters on the old or ripened wood. Few, if any, of these are grown in Canada.

2. PATENS TYPE.—Climbing, large-flowered spring bloomers, flowering from the old or ripened wood. Of this class the following and others are grown here, "Fair Rosamond," "Lady Londesborough," "Miss Bateman," "Standishii," and the "Queen."

3. FLORIDA TYPE.—Climbing, large-flowered summer bloomers, flowering from the old or ripened wood. The following are grown here and all bear double flowers, "Belle of Woking," "Countess of Lovelace," "Duchess of Edinburgh," "Fortunei," "John Gould Veitch," and "Lucie Lemoine."

4. LANUGINOSA TYPE.—Climbing, large-flowered summer and autumn bloomers, flowering successionally in short lateral summer shoots, the flowers dispersed. This is a large class, the following and others are grown here, "Alba

* A paper read before the Waterloo Affiliated Horticultural Society, by the President.

Magna," "Beauty of Worcester," "Fairy Queen," "Henryi," "Lanuginosa Candida," "Madame Van Houtte," "Modesta," "Otto Froebel," and "Paniculata."

5. VITICELLA TYPE.—Climbing, large-flowered summer and autumn bloomers, flowering successionally in profuse masses on summer shoots, but less continuously than the next section, 6.

This is a small section, and I know of only one being grown here, "Viticella Rubra Grandiflora.

6. JACKMANNI TYPE.—Climbing, mostly large-flowered summer and autumn bloomers, flowering successionally in profuse continuous masses on summer shoots. This is a large class and the most suitable for this climate; the following are the ones mostly grown here, "Flammula," "Jackmanni," "Jackmanni Alba," "Madame Grange," "Mrs. Baron Veillard," "Lady Redcliffe," "Rubella," "Star of India," and "Velutina Purpurea."

Then there is another class of shrubby herbaceous plants, of which "Davidiana," "Erecta," "Integrifolia," and "Stans," are examples, and are quite hardy here but do not resemble the climbing varieties at all.

FIG. 751.

Now, while all these different varieties can be grown here, yet it is almost impossible to save the old wood over winter. To leave them on the trellis is certain death to the parts exposed; to lay them down without breaking their slender stems is almost impossible, so that all should be cut in fall to within six inches of the ground, and will bloom on the new wood, but, of course, those whose habit is to bloom on the old wood, will not give such profusion of bloom as those of sections 4, 5 and 6. I have seen a "Jackmanni" at St. Catharines blooming in spring from the old wood left on the trellis all winter. There is a slight gain in earliness of bloom in this, but with fewer blooms later on, for any plant to force sap through a partially dead or dry stem is a waste of strength and injurious, so that I would advise all here

to confine their selection to the Lanuginosa, Viticella and Jackmanni types, as certain to give satisfaction. Clematis will grow in any good, deep garden soil; it cannot be too rich if the manure is well rotted, any plant that for months gives hundreds and hundreds of flowers from four to eight inches in diameter must be well fed, and have plenty of moisture. Lime or chalk or potash is said to be necessary; the first can be given in old lime, rubbish pounded fine, which will also help to keep the soil porous, the latter can be supplied by unleached ashes, and every fall give a coating of six inches thick of manure, not so much for winter protection (they are very hardy) but that the snow and rain may carry the nourishment to the roots and prevent heaving by frost. In purchasing get pot-grown plants, and have the ball of earth kept entire. This is very essential for the roots of young plants are easily injured, but if the ball is not broken success is almost certain. Propagation is mostly from seeds or by grafting, but as it is not suitable for us amateurs we will not discuss it. Old, well-established plants with good roots can be divided safely, if done in spring as soon as growth has commenced; transplanting should always be done in spring, layering in late summer or fall is easily done, then leave them alone the next summer and they will throw up shoots and root readily—and in this way a plant can be extended as far as there is room. Regarding situation, Mrs. Lambert, of New Edinburgh, an enthusiastic amateur, and probably the best authority on clematis in Canada, says they must have the morning sun, and, while this is very essential, it is not absolutely necessary, and being unable to get the best of everything we must make the best of what we have. You all know my house faces the north-west, and is very much exposed, yet I grow excellent clematis on the front verandah, where they do not get the sun until 3 p.m, and the frost remains there in spring long after other places, but only the hardiest succeed, "Jackmanni," "Jackmanni Alba," "Lady Redcliffe," and "Modesta," thrive there, but are at least two weeks later than those in more suitable positions, but I had to remove "Miss Bateman" to a more congenial situation. This will serve to show, that even if our situation is not the best, with a knowledge of the differences in varieties, care and intelligence, we may still be successful. As to which has been the most satisfactory, the purple Jackmanni has long been considered the standard, and is a grand plant, but "Modesta," a little lighter in color than "Jackmanni," has really been the best grower and a more profuse bloomer. "Lady Redcliffe" as a bloomer is not easily beat, but the flowers are of a lighter color than "Jackmanni," are a trifle smaller and do not open out so flat, incline to be a little cup-shaped. "Mrs. Baron Veillard" is a grand plant, and its color, a lilac rose, makes a fine contrast to the purples, blues and whites, "Rubelia" is an excellent plant, a dark, velvety claret, while "Velutina purpurea" is the darkest of all, a rich, blackish mulberry, and "Viticella rubra grandiflora" is the nearest a red, but the flowers are small. Of the whites, the "Jackmanni alba" is a good grower, the flowers are smaller than the purple variety, about half the flowers have two rows of petals, the inner row much smaller than the

others. "Miss Bateman" has the largest and finest flowers of any clematis I have seen, perfectly flat, of the purest white, with chocolate anthers, but being of the "Patens" type, is not as floriferous as others. "Henryi" is another excellent white, a good grower. "The Duchess of Edinburgh" is, with me, a rampant grower, but being of the "Florida" type is not a free bloomer; flowers white and double, frequently the tips of the outer row of petals are green, it is said to be fragrant but I have not discovered any perfume. The new Japanese clematis, "Paniculata," which has been all the rage in the United States for the past three or four years, is a splendid acquisition, hardy as an oak, rapid grower, foliage clear shiny green, commences blooming very young, and in September is one sheet of small white fragrant flowers on long sprays, fine for cutting. Of the shrubby, herbaceous kinds, I grow "Davidiana," or "David's Clematis," and there are few more satisfactory shrubs, but not at all like the climbing varieties, dying down in winter. The stems grow every year from two to three feet high, the flowers are blue, exactly like a single blue hyacinth, with precisely similar perfume, the flowers are in whorls on long stems, and are fine for the centre of a vase of cut flowers. What is known as the clematis disease, originally brought from Belgium, is sometimes found here, and is causing a great deal of trouble in the United States, some nurserymen being unable to sell plants, especially "Jackmanni," on this account. It is of a fungous character, commencing at the junction of stem and root. With me it has only appeared the first year of planting out; a plant may be growing strongly, perhaps commencing to bloom, when it dies off suddenly; if there are two stems, one may die and not the other, but mine have all started again the following spring and remained healthy. So far no complete remedy has been found, although sulphate of copper (blue vitriol) and other fungicides have been tried. A correspondent of "Gardening" two years ago recommended as a preventive, one-fourth sulphur, one-fourth soot and one-half tobacco dust, but this has not in all cases proved a complete preventive; still this is cheap and worth a trial till something better is found. I used it last year and noticed an improvement in the health and vigor of the plants, and mean to continue it, and I think it would be well to use it around the roots of all young plants.

And now in conclusion, let me urge all who can to plant at least one of these beautiful vines. If you have a porch over your door, a piece of blank wall on your house, an unsightly structure to hide, plant some clematis. Galvanized wire netting is cheap and makes a good trellis. If you have a fence to cover and don't want to wait for an evergreen hedge to grow, plant the new Japanese clematis "Paniculata" say six feet apart, and the second and each succeeding year in September, you will have a hedge of snow-white fragrant blossoms, in reality a thing of beauty and a source of delight. There is no home but will be made brighter, more beautiful and home-like by the addition of some of the many kinds of these lovely plants.

JAMES LOCKIE.

Waterloo.

ROSES NEEDING PROTECTION.

IN replying to question No. 3, by "Novice," in the January No. of the HORTICULTURIST p. 40, I beg to say that the yellow Austrian and Persian briers, Harrison's semi-double, and the single-flowering varieties, are the only yellow roses that are hardy enough without winter protection in Central Ontario. The latter, although single, is really beautiful when in blossom; the foliage has also the Eglantine scent of the old-fashioned sweet brier *(Rosa Rubiginosa)* of England; it is a botanist's as well as a florist's flower, and deserves a place in every flower garden. Any variety of the moss rose requires artificial protection in Central or Southern Ontario; in Northern Ontario this may not be necessary, the snow-fall being deeper and the winter not so variable there, natural protection being adequate.

Ever-blooming roses, which are only indigenous to the southern parts of the north temperate zone,—such as Teas, Bengals, Bourbons, Damascenes, etc., may be designated as Remontants, and hybrids of these are named hybrid perpetuals; all require culture under glass. There is another class of Remontants which are hardier, also termed hybrid perpetuals, which are suited for outside culture; these are produced by cross-fertilizing the ever-blooming varieties named above and the annual-flowering or June roses, indigenous to the central and northerly parts of the north temperate zone.

Remontant scarcely applies to this last class of hybrids when grown in Ontario, many of them called semi-annual only flowering twice during the season. Non-remontants may describe the June or annual-flowering roses which comprise the finest and sweetest-scented varieties in cultivation. The greatest troubles the rose grower has to contend with during the summer season are the slug and the thrip; these require vigilant watching. The slug is a small greenish slimy insect which appears on the upper surface of the leaf, and, where numerous, will quickly spoil all the foliage. This pest is readily destroyed by dusting, either with white hellebore, fresh slaked lime, or dry wood ashes, or, what is best of all, to sprinkle or spray water in which tobacco has been soaked. The thrip is a minute whitish fly or midge, usually found on the under surface of the leaf, and not so readily detected as the former; the whitish appearance of the leaf about the midrib reveals its presence; tobacco water is the best remedy, but must be ejected upwards, so as to reach the under surface of the foliage. Handy appliances for this purpose may be obtained at any of the seed stores. N.B.—Do not use Paris green, if possible to avoid it.

Berlin, Ont. SIMON ROY.

THE LANGUAGE OF FLOWERS.

WHAT droll things are to be met with in *Gardeners' Gazette*, or in *Half-hours with Horticulture*, or in *Conservatory Chronicles*, or in whatever other blue-apron and pruning-knife journal falls under the non technical eye! Here is a peep into one of them, just to show its fruits of learning and flowers of speech. In it we read of an orchard-home in full swing; of a stage in a conservatory; of melons having a collar; of a primula getting a habit; of gloxinias wanting a shift; of all plants requiring to be dressed; of peaches forming elbows; of potatoes having well-ripened eyes; of currants having spurs; of pines wanting hot-water pipes under their beds; of specimens being starved to rest; of roses being impatient; of sap being inclined to rush away; of azaleas not liking tobacco-smoke; of figs running riot; of grapes that can stand sulphur-fumes, that are well out of the way, that are no end of trouble, that may not be left to themselves, that will not be hurried, that can get rusty, that are grass-habited, that dislike to be buried, that refuse to be finished off, that rob one another, stone themselves, have warts, and can color, and smell, and bleed, and start!

Gardeners also are directed to do dreadful deeds. They are to pinch the vines, to stake the carnations, to strike varonicas, to behead winter-greens, to turn out bonvardias, to reduce climbers, put endive into cold-pits, prick out celery, and stick peas! The territories in which all this is to be done are as uninviting as possible. They are full, so we read, of red spiders, green-fly, earwigs, mealy-bugs, wire-worm, caterpillars, carrot-grubs, onion maggots, mildew, snails, ants, slugs, scale, club and cats. Nor are the weapons with which war is to be waged against these any sweeter to the imagination. Gardeners are to arm themselves with clay, tar, chalk, soot, lime, bran, sulphur, sweet-oil, wood-ashes, gas lime, resin, soap suds, soft soap, nicotine, soap, tobacco dust, tobacco paper, guano, guassia, paraffin, hellebore powder, fir-tree oil, brewers' grains and red lead. In such perpetual battle against garden pests—as they are called—the one pleasant thought is that all seems to be greatly in favor of the gardener.—Selected by THOS BEALL from Chambers' Journal, January, 1887.

Watering Growing Plants.—During late winter and spring, when indoor plants are making active growth and blooming freely, supply water freely. The soil should not be kept muddy, but just moist. No rule can be given except to water when it is needed, be it twice a day or twice a week. Plants raised in pots without saucers are almost certain to suffer from lack of water. If a plant does not thrive, turn it out of the pot and very likely the lower part of the soil will be dry. Do not water all plants because a few need it, neither let a few suffer for want of water because most of them are wet enough.

ASPARAGUS CULTURE.

THE Massachusetts Ploughman gives these hints on the culture of this popular vegetable: The best soil is a deep, fine sandy loam; any soil that is well-drained and free from stones will answer if not too poor and sandy; but asparagus will thrive on very poor land if well manured. Stony land will not answer at all, as the stones make the sprouts grow crooked and worthless. The soil is best prepared by cultivating in corn or potatoes for a year or two previously, and taking especial care to clean out the couch grass, sorrel and other perennial weeds, which are a great nuisance in the asparagus bed. Plow the land early in spring, working in a good coat of manure if you have it, or if you have none to spare, you can grow first rate asparagus on commercial fertilizers, indeed many prefer them as they bring in no weeds, but don't be afraid to manure liberally. A ton per acre of good standard fertilizers is none too much to begin with, and a mixture of ground bone and wood ashes, or fine ground Carolina rock and wood ashes is as good as anything.

Set out the plants early in May, the earlier the better, even in April if you can get ready; use good one-year-old plants of the Moore's Giant variety, set out the roots in rows, four feet apart, and fifteen inches between the plants, and set them in the bottom of a deep furrow made by running a large plow three or four times in the same place, some even shovelling out the bottom of the furrow so as to get the roots well down, but this is hardly necessary. Cover the roots an inch deep at first, and gradually during the season level off the earth in hoeing them so that they will be quite level. A crop of carrots or other roots may be grown the first year between the rows of asparagus, as they do not shade the land much the first year.

In the autumn of every year cut out by hand, and carefully burn every plant that bears any berries; otherwise their seed will over-run your bed with a crowd of small plants worse than weeds.

The second year the bed should be cultivated and hoed, but not cut till the third year, when a light crop may be taken, and afterwards a full crop for many years.

The cultivation consists in going over the field early in spring with a spading fork, striking the butts of the old stalks so as to break them off under ground, they are then raked into heaps and burned. The ground is then dressed with about 500 lbs., per acre, each, of ground bone and wood ashes, and the surface worked fine by repeated use of the disc harrow or cultivator. This is to be done as early in April as the soil can be worked, and before the asparagus starts into growth. After the sprouts are up the cultivator can be run only between the rows till cutting is over, which will be about June 15 to 20,

when green peas are preferred in the market. The surface is then thoroughly harrowed over, and afterwards the cultivator used between the rows a few times till the "grass" is too thick.

Cutting for market must be done every day in warm weather, and if you wish to rest on Sunday you will have to cut twice on Saturday. Various kinds of knives are in use for cutting, but I have never seen anything better than a common butcher's blade, ground sharp and filed near the point with six saw teeth. This tool will cut for two hours without sharpening, and injures few of the underground buds.

A man in cutting usually takes two rows, laying down each handful as he goes along, and a boy follows with a wheel barrow and barrel or box to pick it up. It is a tedious job to cut and bunch it, though not severely hard work.

The grass when it comes in from the field, is usually at once dumped into a tub of water, and washed, if dirty, or, if dry, bunched at once; the stems can be tied tighter when it is slightly wilted.

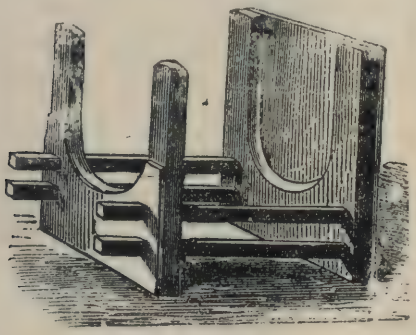


FIG. 752.

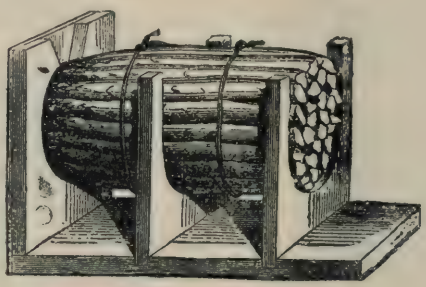


FIG. 753.

Much depends upon the skill of the buncher in making attractive bunches and tying tightly, so as to make no trouble with loose bunches. A small frame is used for gauging the proper size of the bunches, the butts being trimmed off square after tying. Boston market bunches are of size that three dozen just fill the ordinary bushel box full.

The Asparagus buncher is shown in Fig. 752 and Fig. 753; engravings copied from Robinson's "Parks and Gardens of Paris."

A California Enterprise.—The California State Board of Horticulture has recently imported parasites to destroy the fruit-pest known as the white cottony cushion-scale. They survived the long voyage, and are now said to be thriving in their new home, in San Mateo County.—The Garden.

CAULIFLOWERS FOR THE HOME GARDENS.

THE delicious cauliflower, although highly prized by many, is yet too seldom met with in the home gardens of our State. Possessing many of the good qualities of the cabbage, it is to a certain extent lacking in the peculiar rank flavor which renders the former disagreeable to many people. In a general way, the culture is the same as for cabbages. Early varieties should be started in the house or hot bed as soon as the first of April. Handle as needed and set in the open field as early as possible—say the 20th of May, setting the plants about two by three feet. The best soil is a rich, moist, but well-drained, loam. Like the cabbage, the cauliflower is a gross feeder and demands intense culture. If growth be stopped, from any cause, the heads are liable to "button," or form small sections interspersed with leaves, worthless for market purposes.

Frequent cultivation is necessary, and it is probable that in case of very dry weather about the time of heading, irrigation would be a profitable means of securing a crop, at least for home use. When the heads are about three inches across, the outer leaves should be brought together and held in place by means of a piece of twine, or raffia, that the heads may be well bleached. Handling the plants in pots previous to setting in the open field can be recommended, since the indications point to an increased percentage of good heads as a result of such practice. In one of our tests, the foliage of one lot of each of the five varieties, was reduced by one-half, while duplicate lots were left without trimming. As a rule, the per cent. of heads formed was greater from plants not trimmed. There was practically no difference in the earliness of the two lots, nor was there a marked difference in the size of the heads, consequently we cannot recommend the practice of trimming cauliflower plants severely at the time of setting in the field.

Great variation is found in the different varieties and strains of the same type, as regards earliness, percentage of heads formed, and the character and quality of the heads, but nearly all the earliest varieties produced a high percentage of marketable heads, while the late sorts were anything but satisfactory. Most of the late varieties were checked by the dry weather and showed a tendency to "button" or go to seed.

Among the best sorts we have Alabaster, a small, early variety, of erect habit, thus permitting of very close planting; Autumn Giant, a very large, late variety of excellent quality—should not be started so early as most other sorts; Best Early (Burpee's Best Early), small, but one of the earliest surest heading varieties; Dwarf Erfurt, one of the most popular early varieties; Early Danish, of the Erfurt type, forming a medium sized head, very firm and good, one of the best; Kronk's Perfection, a very fine strain of the

Erfurt type, of medium size, early, uniform, and, in our plantation, among the best; Landreth First, of vigorous, erect habit, but having a short stem, heads of medium size, white, and rather remarkable for uniformity, one of the best; Livingston's Earliest, one of the earliest, small but uniform in date of maturity—a valuable consideration in a market variety; Long Island Beauty, a valuable second early sort. Only two cuttings were necessary, and every plant produced a marketable head; Snowball, a moderately vigorous variety; forming small but very solid heads; Thorburn Gilt Edge, not quite so vigorous as the parent, the leaves being slightly smaller and very dense, while the stem is shorter, heads small but of good form and solid, usually one of the most reliable; Danish Snowball differs little from Snowball mentioned above, very early and a sure header.—W. M. MUNSON, Maine State College, in Bulletin 10.

Culture of the Cauliflower.—In a general way, the culture is the same as for cabbages. Early varieties should be started in the house or hot-bed as soon as the first of April. Handle as needed, and set in the open field as early as possible. The best soil is a rich, moist loam, but it should be well drained. Like the cabbage, the cauliflower is a gross feeder and demands intense culture. If growth is stopped from any cause, the heads are likely to "button," or form small sections interspersed with leaves, worthless for market purposes. Frequent cultivation is necessary, and it is probable that in case of very dry weather about the time of heading, irrigation would be a profitable means of securing a crop for home use at least. When the heads are about three inches across, the outer leaves should be brought together and held in place by means of a piece of twine, or raffia, that the heads may be well bleached. —Maine State Agricultural Experiment Station.

Early Peas.—Usually the advice is given to postpone sowing vegetable seeds until the ground is in first rate order. This, though safe to follow for all other vegetables, should not apply with full force to early peas. The extra early smooth varieties, such as Dan O'Rourke, Philadelphia, Alaska, Rural New Yorker, etc., (all good for the purpose), are quite hardy, and not too fastidious as to soil conditions. The sooner you plant them, even if the soil is yet a little sticky, or if cold weather happens to come after planting, the sooner you will have green peas, one of the great luxuries of the garden. We select our patch, a dry, sun-exposed spot, in autumn, and put in the seed just as soon as we can have the land plowed and harrowed in spring, even if yet a trifle wet. We want the ground in good condition. Plenty of manure makes good foliage and large pods well filled with sweet, tender peas. On poor soil the foliage is thin, the pods only partially filled, and the peas not of best quality. Peas on rather thin land are one of the crops which usually pay well for the application of mineral fertilizers.—American Gardening.

HOW TO GROW ONIONS.

ONIONS delight in a rich sandy loam, not too light but porous and friable and free from stones. The preparation of an onion field should begin in the fall. Put on good dressing of stable manure and plow it under and leave it until next spring. How much stable dung to be used cannot be defined here. It depends on the nature and quality of the land. It is well enough to say let the application be liberal, yet there is a limit, when an excess of it may do no harm, neither will the crop be benefited thereby. The following spring, as soon as the ground can be worked, plow again, but shallow. Broadcast some special fertilizer, about 1,500 pounds to the acre. Mix it well with the surface by harrowing thoroughly, and finish with a smoothing harrow to make it as even as a board. If the land be stony, the stones must be raked off by hand. If it be intended to follow onion growing as a special crop, it will be well to buy a regular table seed drill, one that will sow two rows at a time. The one I have reference to sows the rows twelve inches apart. The seed cups are placed between two wheels, which are six inches from the centre of the cups, the wheels thus serving as markers. After sowing roll down the seed. As soon as the seeds are sufficiently up to show the rows, go through them, either with a shuffle hoe or a wheel hoe. I prefer the former. When plants are large enough to handle, thin out to one or two inches. It is not necessary for me to say to keep down weeds, which is best done by going through them with the hoe after every rain.

If sown early enough the onions should be ready to pull in the forepart of August. Should they not ripen fast enough, hasten them by breaking down with the back of a wooden rake. When you are satisfied that the onions have stopped growing, do not delay to pull them, which is best done during a dry spell. Lay them in long rows and leave in the field until perfectly dry. Give them an occasional stirring, and house as soon as dry enough.—Farm and Home.

Potting Cacti.—When potting cacti, all dried roots should be trimmed off; use plenty of sand and charcoal, but little or no water, and roots will form soon. Plenty of sunshine and very little water is the treatment cacti like. February or March is the most suitable time for re-potting, although this may be done at all times of the year. The soil should neither be damp nor dust dry. When the plants are turned out of the pots, shake most of the soil from the roots. See that the roots are spread out and the pots well drained. A handful of sand put directly under the plant will be found very beneficial. Use pots large enough to hold the roots comfortably for all globular varieties. Larger pots are necessary for rapid growing sorts, such as cereuses. Many cacti fail to bloom for a season after re-potting.—Farm and Home.

CELERY CULTURE IN MAINE.

Our method is as follows: We prepare our hot-bed about the last of March or first of April, putting three or four inches of steaming hot manure under a little more than that depth of rich fine soil, covering with sashes and allowing it to heat a little for the next twenty-four hours. The sashes are then taken off and the soil thoroughly stirred. It is then smoothed and pressed down firmly with a short piece of board. The seed is then sown quite thickly on this surface, and a very thin covering of rich loam sifted over it, which in turn is pressed down firmly.

Now a covering of thin cloth is laid over it, thus preventing the seed washing out in watering. When the plants make their appearance, this cloth is taken off, and the outside of the sash daubed with whitewash or mud. The sashes are allowed to remain a little longer, airing freely while the sun is shining on them. Great care is exercised at this point in their growth as they will die if kept too dry, and if kept too wet they will damp off. When the plants are about an inch in height they are transplanted into a bed that has been used in growing lettuce or radishes. About 350 plants are allowed for the space occupied by one sash. The sashes removed, and the plants kept shaded from ten to three for a few days.

All that is necessary is to keep them wet from this time until the 15th to 20th of June. They are then set out in ground that has been heavily manured and fined, in rows six feet apart and one foot apart in the row.

Until the middle of August we cultivate between the rows, and keep the plants clean by hoeing occasionally. After this time we bank up what is needed for the local market. After the first of October we begin to bank up what is to be housed for winter. We begin taking it into the house the 25th of the month.

Most of the writers on celery neglect to speak about the importance of keeping out of the celery while the dew is on. If handled in this condition it is liable to rust.

⁂ Novelties. ⁂

Conrath Raspberry is said to be a seedling of Gregg. The R.N.Y. reports it comparatively tender; but has stood a temperature of 20°. Berries black, with some bloom. Quality better than Gregg, though seeds are too large.

Alice Grape.—On trial with R.N.Y. since 1887. Will keep a long time and finally raisin instead of rotting. So says the originator, Mr. Gunn.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE WATERLOO HORTICULTURAL SOCIETY has been organized with 65 members. Mr. Jas. Lockie is President, and W. A. Raymo, Secretary-Treasurer. By resolution, passed 12th Feb., every member was made also a member of the Fruit Growers' Association of Ontario.

COLUMBIAN EXPOSITION AWARDS.—Constant inquiry is made for these long delayed medals and diplomas. The Director of the United States mint states the medals will be ready about June 1st proximo. The diplomas will be completed about April 1st. The medals and bronze are made at a cost of about $1.25 each. The diplomas are about 22 x 18, and are to be a beautiful work of art. One medal and diploma was awarded our Association for her exhibit of bound volumes of THE CANADIAN HORTICULTURIST, under the head of Horticultural literature.

CANADA RED.—An apple has been grown for some time in Ontario and Quebec, under this name, the identity of which is now called in question. So well has the apple succeeded in the Province of Quebec that the Montreal Society is desirous of distributing it among their members this spring. Mr. J. C. Plumb, of Milton, Wisconsin, to whom samples were sent, declares that it is the Baltimore of Downing. Certainly the description of this variety does closely coincide with the apple in question, but no Canadian pomologist seems to remember the Baltimore having ever been introduced into Canada. Possibly these are but two names for the same apple, the differences being due to locality and other conditions of growth.

PROFS. CRAIG AND FLETCHER paid a visit last month to the Niagara peninsula, addressing large gatherings of fruit growers on spraying for fungi and insects. For *peach rot* and *leaf curl*, the formula recommended by them was 3 lbs. copper sulphate and 3 lbs. lime to 40 gals. of water. Three applications, 1st, just after blossoms fall, and the second and third at intervals of ten days or two weeks.

FOR PEAR SCAB the early spraying was advised as the most important;e indeed, two applications before bloom being of more importance than thre after the bloom falls.

CURRANTS, at the experimental farm sprayed with Bordeaux mixture for the shot hole fungus, first, about one week after picking the fruit, and afterward twice at an interval of about three weeks, kept growing the whole season.

DEATH OF MR. JOHN J. THOMAS.—We chronicle with sincere regret the death of that eminent horticulturist and pomologist, Mr. John J. Thomas, of Union Springs, N.Y. He is best known to us in Canada as the author of The American Fruit Culturist, a book still more in demand than perhaps any other among Canada fruit growers. Though first published fifty years ago, it has been so often revised that it is still one of the most useful books of its kind. A new edition was almost completed by its author before his death, and will soon be published.

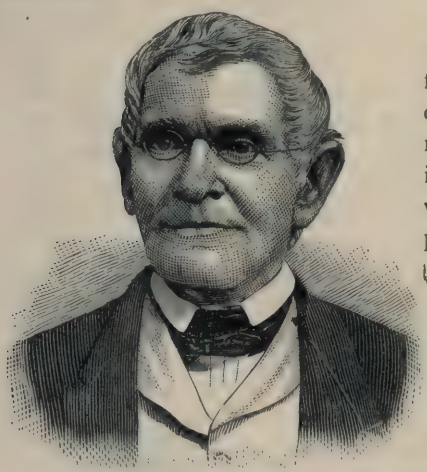


FIG. 754.—J. J. THOMAS.

Mr. Thomas died at his home on the 22nd of February last, at the age of eighty-five years. The Garden and Forest says of him: "From his father, who was a naturalist and explorer of distinction, he inherited the power of original research which led him to investigations and experiments which have been useful in so many branches of horticulture. Nine volumes of miscellany, entitled Rural Affairs, which are selections from the Country Gentleman, of which he was an associate editor, and another interesting work on Farm Implements and Machinery, were prepared by him, and they rank among the most useful manuals for a country library. Personally, Mr. Thomas was a man of great simplicity and sincerity of character, combining sturdy integrity with a rare refinement, gentleness and unfailing charity.

SIZE OF FRUIT BASKETS.—A committee appointed by a fruit growers' meeting in Grimsby last February prepared the following report on sixes of fruit

baskets—it being understood that these sizes do not apply to fancy baskets in crates, but only to ordinary fruit baskets. The names given them are only to distinguish them ; the sizes are supposed to be the same for each number, no matter what fruit is put in them. Taking wheat of standard weight as a medium to determine the capacity of packages, the sizes of fruit baskets should be as follows :—

	lbs.	oz.
No. 1 (pint berry box) should (contain of wheat.)	..	12½
No 2 (quart berry box) " "	1	9
No. 3 (half peach basket) " "	11	4
No. 4 (10-lb. grape basket) " "	13	14
No. 5 (12 qt. peach basket) " "	22	8
No. 6 (16 qt. grape basket or 20-lb. grape basket) should contain	30	..

Your committee considers that the above is the simplest and most practical method of determining the capacity of fruit packages.

E. J. WOOLVERTON, *Chairman.*

THE GOVERNMENT OF TASMANIA has agreed to guarantee the freight on 30,000 cases of fruit to the London market, and is making every effort to encourage large export trade in apples to Great Britain. One condition is that no apples be forwarded less than 2¼ inches in diameter. We cannot see why our own Dominion should not do as much for her fruit industry, for it is one of greater magnitude than that of Australia. We need cold storage on ship board ; we need a Canadian market in London ; and if there is an opening for our apples in Australia markets in certain months of the year, we need to have the freight guaranteed us on a good sized trial shipment, until we gain confidence in the possibilities of such a distant market.

The Farmers' Boy.—Let the areas set apart for the boy be sufficiently large to ensure returns fairly commensurate with his hopes and ambitions, and cheerfully accord the profits to him. Shorten the hours of the day's work and give room for rest and recreation. Furnish your sitting and dining rooms with the best rural pictures of your province, and make the homestead worthy of a new view as often as you can. Take the farm and fruit papers published at home, and add to the library such current literature as will awaken and sustain fresh interest and dignify your work. Again I repeat, make business men of your boys on the farm in a wide knowledge of every market available, and expert method in reaching it. While you may have excellent land, use good varieties and care for the orchard, giving utmost care to assorting and packing, and always use clean packages. The effect of your reputation and demand for your fruit will influence the boys. Education should be well laid in a full and extensive knowledge of all that relates to agriculture. How plants live and grow, or the evolution of plants with the origin of varieties or the history of soils ; the theory of tillage and yield of crops, etc. Youth is the time to acquire familiar knowledge of details near and remote —W. C. ARCHIBALD, Wolfville, N. S.

Question Drawer.

Grafting Wax.

713. SIR,—How do you make your grafting was? What materials do you use and in what proportion?
JOHN DYNES, *Caledon, Ont.*

A good recipe to make wax for out-of-door grafting is as follows: Resin, 4 lbs.; beeswax, 2 lbs.; tallow, 1 lb. Melt together and pour into a pail of cold water. Then grease the hands and pull the wax until nearly white.

Cankered Limb.

714. SIR,—Could you explain what is the trouble with the apple limb I send you? Will it spread, and can it be cured?
W. B. MITCHELL, *St. Marys.*

The Gravenstein, according to Mr. Craig, not unfrequently becomes flat limbed, like this sample. The blight of the bark is probably simply the result of some injury, though it is something like the canker, which is a disease well known in England. It is probably a fungus, and may be cut out, and thus kept from spreading.

Pruning Grapes.

715. SIR,—Is it safe to prune my young grape vines, set one year ago?
J. R. *Everett, Ont,*

The sooner the pruning of the vine is finished now, the better, whether young or old. A still better time is in the months of November and December. Vines one year planted should be cut back to two buds.

Horticultural Exhibitions.

716. SIR,—What is the most suitable flower or flowers for distribution among the members of a Horticultural Society in order that a good showing may be had at their first exhibition?
D. W. MCKAY, *Sec. Port Colborne Society.*

Reply by Mr. Thomas Beall, Lindsay,

The answer depends upon whether the exhibition to which you refer is to be for *money prizes* or for *honorary prizes.* If the former, I have no advice to offer, as any exhibition of that nature will lead into difficulty, and quickly ruin your Society, just as it has wrecked almost every Horticultural Society in the Province which has adopted such exhibitions. On the other hand, if your exhibition is intended to be a contest between your members, having for its object a friendly and healthy stimulus to greater exertion for excellence in

horticulture, and for honorary prizes only, and is to be held in connection with one of the meetings of your members, which meetings should often be held for your mutual encouragement and advantage, then I would say that any flowers that may be in season when such meetings are held will be the most suitable.

Varieties of Plums.

717. SIR,—In planting an orchard of, say 200 plum trees, what four or six kinds would you recommend as being the most profitable and salable? Soil, clay loam.

J. A. TIDEY, *Norwich.*

We always dislike to answer questions on varieties, because no settled reply can be given. The varieties which are most profitable or the most productive one season are the least so another season; or some new variety may have supplanted an old one, or the tastes of consumers may have changed. Thus a different reply might be given each year, and each be correct from the standpoint of the person replying.

The following are six good market plums: Bradshaw, Lombard, Glass, Yellow Egg, Pond's Seedling, Coe's Golden Drop.

Sickly Geraniums.

718. SIR,—Will you please answer, through the CANADIAN HORTICULTURIST, the cause of geraniums casting flowers and buds. They were in full bloom up to severe weather in December, when we had to put extra fire on, and in three days all flowers and buds were destroyed; the leaves did not appear to be affected with heat. We have a brick flue, which when made very hot gives out a disagreeably sulphury smell. Can you name remedy at small cost; they were not frozen and were all double ones?

WM. SPENDLOW, *Billings Bridge, Carleton Co., Ont.*

Reply by Messrs. Webster Bros., Hamilton.

The injury results from gas. It is evident that the flue is leaking. A careful examination must be made, and all cracks carefully closed with mortar well worked in. It is just possible that the chimney is not sufficiently high to insure a sharp draft, or it is possible that the flue is foul and needs cleaning.

Red Raspberries.

719. SIR,—How long will red raspberries thrive and bear well, if properly attended?

THOS. H. ALTON, *Woodbank, Ont.*

The black caps, which are increased by tips, and which send up the new canes from the same root year after year, will not continue productive more than eight or ten years; but the red caps, which send up new shoots from suckers, may be continued for an almost indefinite period by good cultivation and manuring.

Pruning Raspberries.

720. SIR,—Is it advisable to cut out the old wood in red raspberry bushes in September? T. H. A.

Yes, this work may be done any time after fruiting season, for the old canes have then finished their life work and will gradually die in any case. They had better be removed in September, and the young canes thinned out.

Ashes and Lime.

721. SIR,—Is wood ashes, or lime, a good fertilizer for berry bushes? If not, what is good? T. H. A.

Wood ashes is one of the best of fertilizers for a fruit plantation, especially on light soils. Potash is one of the chief elements entering into the constitution of both plants and fruits. Lime is frequently valuable, because it sets free other elements, but is not in itself of much value.

Spraying.

722. SIR,—If grapes need spraying after the grapes are formed, what would you use? When should plum trees be sprayed, and with what? What would you use for mildew on grapes or gooseberries? T. H. A.

See the Spraying Calendar in March number.

The Wilson.

723. SIR,—Would you recommend the Wilson strawberry? If not, what is better? T. H. A.

Yes; where the foliage is not subject to rust, it still stands among the most productive and profitable of strawberries.

If we were to choose four others, they would be Williams, Bubach, Haveland and Saunders.

Pruning Grapes.

724. SIR,—How late in winter may grape vines be pruned? T. H. A.

Grape vines may be pruned any time from the fall of the leaf in autumn, until the buds begin pushing in spring. It is usually thought best to complete the pruning not later than April 1st, to avoid too great loss of moisture through the wounds. Whether this really affects the productiveness, is a question for our stations to solve.

Scraping Trunks of Apple Trees.

725. SIR,—Should the rough bark be scraped off the trunks of apple trees with a dull hoe, and when? T. H. A.

When a tree is growing vigorously, it will throw off the old bark without assistance. The only object in scraping it off is to remove some of the hiding places of insects and fungi. A favorite covert for the oyster-shell bark louse is under old loose portions of bark, and there they are protected from the effect of kerosene emulsion spray. So to thoroughly rid the tree of this tiny but most destructive insect, it is necessary to scrape off the loose bark, before washing or spraying the tree. A dull hoe is as good an instrument as any.

Lime or Ash-water for Apple Trunks.

726. SIR,—Which is better to use as a wash for apple tree trunks, lime-water or lye-water? T. H. A.

Whitewashing trees with lime is of little use, simply making an orchard look hideous and to no especial purpose. Ashes and water, or lye water, or any other alkaline solution is destructive to the bark louse and other insects. If applied about the 1st of June it will best destroy the bark louse.

The Borer.

727. SIR,—How can you tell when borers are in a tree, and how would you kill them? T. H. A.

The presence of borers in young apple trees may usually be detected by a dark discoloration of the bark, which sometimes becomes so dead as to crack open. Besides these some castings may usually be seen protruding from the point of entrance. They must be cut out with a sharp knife to save the tree; or a wire may be inserted, if the larva is near the surface, and the borer destroyed. The best plan is to prevent the depositing of the eggs in the trunk, by washing with strong soap suds in June and July, when the parent beetle is flying. This will drive it away.

Worms on Currant and Gooseberry Bushes.

728. SIR,—What would you use to kill the worms on currants and gooseberry bushes? T. H. A.

Spraying or sprinkling with Paris green water when the saw fly first appears is most effective; but when currants are formed, hellebore should be used, either dusted on dry, using a glass goblet with a leno cover as a sprinkler; or in water, one ounce to three gallons, applied with a watering can.

Rich Ground for Strawberries.

729. SIR,—Do strawberries require extra well manured ground? T. H. A.

Yes. You can scarcely make the soil too rich for strawberries. Nothing is better than plenty of barn manure.

Cultivating Time.

730. SIR,—When should you stop cultivating among the berry bushes, with the cultivator? T. H. A.

Not so long as weeds grow, or ground is inclined to become baked.

Fruit Farms.

731. SIR,—What is the usual price per acre of fruit farms about Grimsby (1) when well set out in fruit trees, but not yet of a bearing age, (2) when in full bearing? What may be regarded as the highest yield per tree of (*a*) peaches, (*b*) pears, (*c*) plums? What may be regarded as the highest yield per acre of small fruits, as (1) currants, (2) raspberries, (3) grapes? REV. MR. FERGUSON, *Grimsby.*

Such questions as these are very difficult indeed. We are constantly receiving them, but hesitate very much in making any definite replies, because there are so many different results in fruit growing, according to the amount of experience and knowledge which one brings with him into the business.

1. The usual price per acre for fruit farms about Grimsby, when first set out with fruit trees, but not in bearing, is about $150 per acre, and when in full bearing it is valued all the way from $300 to $500 per acre. This will depend, however, upon the profitable or unprofitable nature of the fruits which occupy the land.

2. Peaches often yield about seven or eight baskets per tree. Pears yield so variously according to the aid of trees, that it is difficult to make any definite statement. A common outside yield would be about twenty baskets per tree, but some varieties would not yield half that amount. Plums yield about the same as peaches.

3. Currants and raspberries will yield somewhere about two or three thousand quarts per acre, but the yield may far exceed this amount under special conditions. Grapes, like all other fruits, vary in yield according to the varieties planted, some kinds being very productive, and others very scant bearers. Concords and Niagaras often yield from three to four tons per acre, while some varieties, as, for instance, the Delaware, would not yield half that quantity.

Irrigation.

(*Reply to Question 697.*)

Prof. Taft, of the Michigan Agricultural College writes: "Answering your correspondent, I would say that if only a small amount of water is required and if the conditions are suitable, the simplest and least expensive method of lifting the water to the height mentioned, will be by means of a ram. As next to this I would place the gasoline and hot air pumping engines, but if a large area is to be irrigated there is nothing that I know of that will approach, in efficiency and cost for the work preformed, a good steam pump."

Fall vs. Spring Planting in the North-West.

(Question answered by Mr. John Craig, Ottawa.)

Replying to your letter of the 8th inst. regarding the advantages of fall and spring planting of small fruits in the North-West Territories, I may say that our experience at Indian Head and Brandon has been entirely against fall planting of small fruits, as well as all other fruit and forest trees. One of the difficulties that a planter has to contend with in the North-West lies in the fact that there is in the autumn a very slight amount of moisture in the soil, and if the trees and plants are not injured by winter—as they usually are—they suffer from drought and the drying out effect of the winds. There is not sufficient moisture in the soil to start the initial processes of growth in roots of even currants or gooseberries, and in the North-West there is usually not enough snow to protect them from cold, unless well rooted. It is very much safer and altogether more advisable, the plants having been secured in the fall, to bury them completely in the soil, and plant in the spring upon summer-fallowed ground.

⁂ Open Letters. ⁂

Experimental Work.

SIR.—I have a small experiment station on a private scale in my own garden, consisting of 28 varieties of plums, 12 of pears, 12 of apples, 4 of peaches, 4 of gooseberries, several strawberries and a few currants and raspberries, planted from one to three years. You will hear from me occasionally when they come into bearing, whether of success or failure, by the way, I might mention last year's success with 12 Lombard plums, planted May, 1891. I picked 5½ bushels of beautiful fruit, and 107 quarts of Dowing gooseberries from 13 bushes planted same time, sprayed twice during the season, which I believe saved my fruit entirely from rot, and partially from the little Turks ravages.

WM. JUDGE, *Orangeville.*

Inarching.

In the November number of 1894 there is a cut given on Arch-grafting. I have a young pear tree with a fork similar to the cut drawn. I should like to perform the operation of arch grafting on it while it is yet young, if some kind friend would give me some simple directions how to proceed, through the CANADIAN HORTICULTURIST.

JOHN FURSEY, *Cedar Dale.*

Inarching, sometimes called grafting by approach, is performed by uniting a scion to a stock without separating either from its root until the union is complete. In the case before us it would be necessary to train a small branch to go across the crotch, and, after cutting back a little of both, so tie them firmly in position that their barks would unite, and in time grow firmly attached. We have had cases of natural union in our trees of this kind, and the cordon training of apple trees in England is on this principle.

With young pear trees, it might be better to remove one on the branches entirely.

FIG. 755.

Prunus Simoni.

(See May No, page 190, 1894.)

These plums should be scalded in hot water and the skins quickly removed before tanning. You will then find them most excellent fruit. A friend of mine who tried this way last fall on several jars, is buying more trees of this variety to plant out this spring.

E. W. S., *Woodstock.*

Industry Gooseberry.

SIR,—My daughter in England writes me about a large yield from four Industry gooseberry bushes that averaged sixteen quarts each. She said the bushes are about sixteen years old and from six to seven feet across. They have since been destroyed, as the land was used for building purposes. This was near Morpeth, where the Industry originated. My daughter has sent me a bundle of cuttings from these bushes. The wood is the stoutest I have ever seen.

W. E. BROOKS, *Mount Forest.*

News from our Societies.

SIR,—Our Secretary is forwarding you his list of names to-day. I hope we may be able to keep up the enthusiasm, which is strong just now. We are ordering 1,200 gladiolus bulbs, 60 cannas, 60 single and 60 double tuberous-rooted begonias. When each member gets 20 gladiolus bulbs, 1 canna, 1 single and 1 double tuberous-rooted begonia, we expect it to be a surprise and delight to them; and we will add other things. I read a paper on Tuesday evening to the Society on "Clematis Growing."

JAS. LOCKIE, *Waterloo.*

GREEN MOUNTAIN.

THE

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GREEN MOUNTAIN GRAPE.

UP to the present time, the Lady has been considered the best early white grape; being a poor shipper and not very productive, it has never come into much favor with commercial growers.

The Green Mountain is a chance seedling discovered by a Mr. Winchell, on the slopes of the Green Mountain in Vermont, and hence is sometimes called Winchell. Indeed, this latter name is the more fitting, because it is customary to give new fruit the name of the originator or the first discoverer.

The Green Mountain is thus described in the latest edition of the Bushberg Catalogue: Vine, very vigorous and healthy with large foliage; no mildew; productive; fruit of very good quality; bunches of medium size, well shouldered; berries of greenish-white color, medium size; skin thin; pulp tender and sweet, with few and small seeds; flavor excellent.

In the report of the N. Y. Experiment Station for 1889, this grape is said to have ripened August 28, and the Concord on the 21st of September.

We know of no one who has given this grape a fair test in Canada as yet, but we shall be pleased to hear from anyone who may be experienced with this variety.

Dahlia and Canna bulbs should be started in boxes or hotbeds and allowed to sprout and then be divided, after which they can be potted and they will be ready for the flower beds by the middle of May. For amateurs, division of the root will more than supply their needs, as each will divide, if started in a hotbed or other warm place, into at least six good plants.—Farm and Home.

THE CULTIVATION OF STRAWBERRIES.

GARDEN and Forest condenses a late bulletin of the Ohio Experimental Station, on this subject, as follows: Most varieties of strawberries fruit more abundantly the second season than the first, and the berries are correspondingly smaller. For home use it is not a matter of importance as to the length of time a bed is kept, but for market there is seldom any profit in keeping a bed of any of the prolific medium-sized sorts more than one season. It usually costs less to plant a new bed than to clean out an old one, and it is much easier to keep a new bed clean. The earliest berries come from old beds, but they are smaller, and the fact that they are nurseries for insects and diseases condemns them. In treating an old bed, many practical growers mop the tops off the plants and burn over the bed when they are dry. This is the best possible way of checking rust. Straw and leaves used as mulch should be raked into the centre of the rows before burning when there is danger of injuring the plants by too great heat. After burning, the ground between the rows should be kept thoroughly worked.

Winter protection should be given, not to keep the plants from freezing, but to prevent them from heaving and to retain moisture in summer and to keep the berries clean. Early winter is the best time to apply it. Straw is objectionable because of grain and weed seeds, which it contains. The best material is marsh hay, which is free from foul seed and is not easily blown off. It is not advisable to remove this mulch in spring either to avoid early frost or to cultivate, unless the bed is very weedy.

The proper proportion of perfect and pistillate flowered sorts to plant is an open question. Varieties and seasons have, perhaps, much to do with the matter, and no definite rules can as yet be given. One of the pollen-bearing sorts in every five plants is usually sufficient, and it is well to mate the two classes as to time of blooming, color, size and firmness of fruit as nearly as possible. The most prolific sorts are found among those which have imperfect flowers, although many of this class are not prolific. The best of the imperfect-flowered varieties are better than the best perfect-flowered varieties as to prolificacy, as to freedom from disease and general reliability. Many perfect-flowered kinds bloom as freely and set as many berries as any of the other class, but they are more apt to succumb to drought and unfavorable influences—that is, they are not so likely to carry a crop through to perfection as those that bear no pollen. This fact is so well understood that the general custom is to plant as few as possible of the perfect-flowered kinds, and the numerous inquiries after reliable varieties of this class show that something better than we now have is wanting.

PLANTING AND CARING FOR YOUNG TREES IN AN APPLE ORCHARD.

ONE of the first requisites to successful orcharding is to begin well. This bulletin briefly outlines for the guidance of intending planters some of the chief points which should be considered.

Location and Exposure.—In selecting the site for an orchard two of the main things to be sought for are exemption from late spring and early autumn frosts, and shelter from the prevailing high winds. The locations least subject to injurious frosts are those bordering large bodies of water, and, in the interior, the high lands. It is important to plant apple trees on the highest land available. If the elevation is not more than ten feet above the general level of the adjacent land, it affords an advantage in allowing the cold air to drain away into the lower levels, and lessens the danger from frosts, which often do great injury when the trees are in bloom. One of the worst locations is a sheltered valley from which there is little or no atmospheric drainage, and into which the sun shining makes it the hottest spot during the day, while the cold air settling into it from the higher elevations makes it the coldest spot during the night.

A free circulation of air is very desirable in an orchard, and a full exposure is better than shutting it in too closely, yet it is advisable to have the orchard somewhat sheltered from the full force of the prevailing winds. These in most parts of the country come from the south-west. The shelter, therefore, should be on that side, and may consist of a strip of woodland, or a belt of Norway spruce put out at the same time as the orchard, or best of all, if possible, plant the orchard on a hillside having a northern or north-eastern exposure. Such a location and exposure is least subject to sudden changes of temperature, drouth and the prevailing high winds.

The Soil and its Preparation.—Apples may be successfully grown on a great variety of soils, from a moderately light sand to a heavy clay. The best soil, however, is a deep, open, clayey loam, which should be well drained either naturally or artificially. In addition to this it should be moderately rich and retentive of plant food, for it is impossible to raise good fruit on poor soil.

To prepare the land for planting it should be plowed deeply in the fall and put in good condition in the spring, as if prepared for a hoed crop. If the sub-soil is a hard clay into which the roots of the trees cannot readily enter, it should be loosened up by means of a sub-soil plow. Where it is not convenient to treat the whole ground in this way, do a strip at least five or six feet wide where each row of trees is to stand, or when planting dig the holes much wider and deeper than would be otherwise necessary for planting.

Distance Apart for Planting.—It is impossible to state any particular distance apart for planting which would be suitable for all conditions. The rule should be to allow space enough so that when the trees are full grown the tops will be a few feet apart. This allows the free admission of sunlight so necessary in producing well-colored fruit. The ultimate size of a tree will depend much upon the variety, and the soil upon which it is grown. Varieties such as the Ben Davis or Ontario, for instance, require much less room than large growing varieties such as the Greening or Baldwin, while a tree of any given variety will grow much larger or smaller than usual according as it is grown on richer or poorer soil. The best guide to intending planters is to observe the distances apart of full-grown thrifty trees in the neighborhood. These will be found to vary with different varieties in different sections all the way from twenty-five feet in the case of the smaller growing varieties to forty feet in the case of those varieties that spread. The average distance will be about thirty feet. It will be found to be better to keep them a little too far apart rather than to crowd them.

Arrangement of Trees.—There are several methods of arranging the trees in an orchard. The one usually adopted is the square; most used no doubt because many do not know of a better. By this arrangement the trees are planted in rows the same distance apart each way, four trees forming a square. A much better plan is what is known as the hexagonal. By this system fifteen per cent. more trees can be grown per acre without the least bit more crowding —no small item when we consider that the profits per acre are inrceased accordingly. By the hexagonal arrangement the trees in the second row are set alternating with those in the first; six trees forming a hexagon and enclosing a seventh in the centre. To ascertain the correct position for the first tree in the second row, and consequently the distance apart of the rows that way of the orchard, take two strings the same length as the distance apart at which the trees are to be planted, fasten the end of one to the first and the other to the second stake in the first row, then stretch the free ends out till they meet, this point will mark the position for the first tree in the second row.

Whichever method of arrangement is adopted the trees should be set in perfectly straight lines, the first tree, no matter which way we look, hiding every other tree in the row. Crooked rows are not only an eyesore, but during cultivation they endanger the lives of the trees as well as the morals of the man who has to cultivate them. To assist in getting the rows straight, the position of each tree should be marked by a little stake before the holes are dug. Then when planting use a "planting board." This may be five or six feet long and six inches wide, with a notch in one side at the middle, just large enough to let in the trunk of a small tree, and a hole at each end at equal distances from this notch. When a hole is to be dug place this notch about the stake and put a peg through each hole at the end. The board may then be taken up and the hole dug. When the tree is to be planted replace the board over the pegs and

place the tree in the notch. It will thus stand in the exact position as the stake which marked the hole.

Fertilization of Blossoms.—That the blossoms of a tree may "set" or become fruit, they must be fertilized with pollen from their own or some other tree. It has long been known, however, that nature abhors self-fertilization, and that she resorts to various modifications of the flower to prevent it, and thus secure if possible cross-fertilization. Bees and other insects flying from flower to flower are the chief agents in distributing the pollen and bringing about cross-fertilization.

In accord with this many varieties of apples have been found to be more or less self-sterile—that is, their pollen will not properly fertilize their own blossoms, although it may be quite potent on the blossoms of some other variety. Recent experiments conducted by the United States Department of Agriculture, have clearly shown this to be the case with many varieties of pears, and even those varieties which are self-fertile were found to bear larger fruit and more of it, when fertilized with pollen from some other variety.

Transplanting.—There is quite a diversity of opinion as to the proper time for planting trees. It may be done in either spring or fall when the tree is dormant. As a rule, however, planting in early spring is the safest in our climate.

If, when the trees arrive from the nursery. it is not convenient to plant them at once, they should be "heeled in" by placing the roots in a trench and covering them with mellow soil, well packed, to prevent their drying out. Never allow the roots to be exposed to the sun or wind any more than can be helped.

No matter how carefully a tree has been taken up, its roots are always more or less mutilated and broken. All such injured roots and broken ends should be cut back with a smooth cut to sound wood. That a newly planted tree may flourish, it is necessary that a balance should exist between the roots and tops or branches, consequently when transplanting the tops should be cut back to correspond with the roots that remain.

The hole should be cut wide enough to allow the roots to be extended freely in all directions, and deep enough, that, after a few inches of surface soil have been filled in the bottom, the tree will then stand about the same depth as it stood in the nursery. Spread the roots out carefully in their natural positions and cover them with moist, mellow surface soil. When the hole is about half filled, get in and tramp the earth firmly about the roots. Omitting to do this is one of the most frequent causes of failure in transplanting. If watering is necessary a pailful may then be added, but this is seldom necessary except in a very dry time. The balance of soil being filled in and tramped firmly, a couple of inches on top should be left loose and untramped. This acts as a natural mulch, checking the evaporation of moisture from below.

(*To be continued.*)

O. A. C. Guelph. H. L. HUTT.

RECENT APPLE FAILURES.

ULLETIN 84, of Cornell, by Prof. L. H. Bailey, is calculated to be of much benefit to apple growers. He points out that this has been largely induced by want of cultivation, want of drainage, want of manure, and, above all, by the presence of the apple scab fungus. He proceeds to say :—"The best proof that the apple scab fungus is the immediate cause of the greater part of the apple failures of Western New York is afforded by the fact that thorough spraying with Bordeaux mixture is usually followed by a great increase in the productiveness of the orchard; and it may be said that the indifferent results which occasionally follow the spray are equal proofs that there may be other causes than the fungus, for the failures. Much of the failure with the Bordeaux mixture, however, is due to careless or hasty application. If the Bordeaux mixture is properly made—using an excess of lime—no injury may be expected to follow its use, and it should be applied with great thoroughness. The operator should endeavor to completely cover all the leaves and shoots. A mere sprinkling, such as most persons give, is of little good. One thorough application which drenches the tree, is better than several of this ordinary kind. Then people are always waiting for fair weather. Now, it is in the rainy weather that the fungi spread most seriously, and it is then that the spray is most needed. With plenty of lime, the mixture adheres well. Spray between the showers, even when the trees are wet, if you can do no better. To delay is to fail. It is better to spray in the rain than not to spray at all.

There is abundant proof that two to four applications of Bordeaux mixture are capable of keeping the fungus almost completely in check. It is not known what value there is in an application before the buds open, but it can do no harm, and it is probable that it is very serviceable in most seasons. At the latest, spraying should begin as soon as the blossoms fall. Make the Bordeaux mixture with 6 lbs. of copper sulphate, 4 lbs. (or more, if the lime is air-slacked) of lime, and about forty gallons of water. It is always advisable to use Paris green for various insects,—1 lb. to every 250 gallons of the mixture. Then take up your position near the tree, with a strong pump, and apply the mixture until the tree is soused."

Speaking of the great importance of good tillage of the orchard, the Professor says :

"Good tillage should be the first intention of the apple grower. But this can be satisfactorily given only in orchards which have been properly planted. The roots should be deep enough to allow of easy plowing, not only because the tillage may thereby be improved, but also because the roots are then in moister earth and they suffer less from dry weather. Planters frequently make the mis-

take of setting their trees too shallow. It is probably better to have them stand rather deeper in the orchard than they did in the nursery; but whatever depth the person may design to plant them, he should make allowance for the settling of the soil. Land which has been for some years in pasture, meadow, or grain, is elevated or loosened by plowing, and it frequently requires an entire season of good tillage to compact it to its normal level. But the trees are set in the subsoil, and therefore do not settle; and the owner may find at the end of a year or two that his trees seem to stand too high out of the ground. When setting trees on newly turned land, the planter should allow one or two inches for the settling of the soil, and thereby increase the depth of the planting.

"Persons often tell me that they know of productive orchards standing in sod. So do I; but this only proves that the land is unusually good. The great majority of orchards contradict this experience, and reason is against it. For myself, I should consider that I could not afford to run the risk of placing orchards permanently in sod. There are cases in which thrifty young orchards can be thrown into bearing by seeding them down, but this is only a temporary expedient, and if the land is again brought under cultivation, when the desired result is obtained, no harm will come. If the old orchard is giving satisfactory returns in sod, it would be folly to plow it up; but if it is unprofitable, something must be done. Next to tillage, pasturing closely with sheep or hogs is the best thing which can be done; and if the stock is fed grain, so much the better."

In proof of the decided advantage to be gained by the application of the Bordeaux mixture, several letters from orchardists are inserted, showing the immense increase of crops gained by faithful spraying. We extract one of these letters, written by G. H. Bradley & Son, Niagara County, N. Y., as follows:

Our Duchess of Oldenburg orchard is 17 years old and has 375 trees which produced this year 900 bbls. firsts and windfalls, which netted us $2,100. We sprayed three times with Paris green. The orchard has been cultivated and fertilized with stable manure for the last four or five years. There were almost no No. 2 apples. We picked 200 bbls. at one picking, and had only 3 bbls. of No. 2.

Our Twenty Ounce orchard yielded at the rate of $400 per acre, treatment same as Duchess, except that it was sprayed seven times with Paris green and Bordeaux mixture. Baldwins and Kings yielded at the rate of $150 per acre, and the quality was No. 1. They were also sprayed and manured.

Duchess sold for $2.75 per bbl., Twenty Ounce sold for $2.35 per bbl, Baldwins and Kings sold for $2.00 per bbl.

PLUM CULTURE IN ANNAPOLIS VALLEY.

THE plum industry in Nova Scotia has made rapid progress during the past few years in various parts of the Province. This may be especially observed in the Annapolis Valley. This Valley has been referred to in the HORTICULTURIST in the past, and its natural resources as a fruit belt pointed out, showing that it is perhaps the most favorable section for apple growing in Canada, producing fruits far-famed for their fine flavor and extreme hardiness, with a continuous market in London. The Ernscliffe Gardens, shown in the accompanying cut, Fig. 765, is situated in Wolfville, N.S., and is at present the most improved garden of its kind in the Province; owned by Mr. W. C. Archibauld, one of the leading horticulturists and large fruit growers of Nova Scotia. Mr. Archibauld has become one of the principal factors in the Fruit Growers' Association, and through his enthusiastic and energetic work has been of invaluable assistance in raising the high standard of that Association and the establishing of the School of Horticulture.

FIG. 765.—THE ERNSCLIFFE GARDENS.

The gardens referred to contain twelve acres of land, carefully laid out, with attention to landscape effect, consisting of groves of apples, pears, plums, cherries, peaches, etc., together with small fruits, illustrating the many excellent lessons to be found in extensive orcharding in which Mr. Archibauld is a stanch believer, and which he has shown to be of great value from a paying standpoint. A grove of 3,500 trees are now in bearing upon these grounds, bringing in returns during the past three years of between three and four hundred dollars per acre.

It is to these plums I would call especial attention, as certain valuable information may be taken from this part of the gardens, as many other practical problems of worth from the whole. The trees are set out eight feet apart in the row with rows the same distance, a roadway alternating every fifth row. The ground, prior to setting out the trees, was carefully subdivided, varieties of plums intermixed, and such varieties set as were determined by selection and test, planting early and late varieties. Among those varieties of the early class may be found as most desirable: The Willard, Czar, Field and Moor's Artic, ripening between the 10th of August and the 10th of September, in about the order named. Of the late plums, Monarch, Reine Claude, Peter's Yellow Gage and Grand Duke, perfecting their fruit from September 18th to October 15th. In reference to the last named plum (the Grand Duke) in the last number of the HORTICULTURIST, some doubt as to its lack of production in wood growth was advanced. In the Annapolis Valley, as far as I have observed, the Grand Duke is a very rapid grower in wood, equal to, if not in excess of, other varieties of its class. In the Ernscliffe Gardens during the past season it has made remarkable wood growth. This, together with its time of fruiting, color, firmness, keeping qualities of fruit and hardiness of tree makes it a very valuable plum for Nova Scotia. Mr. Archibauld, last season erected a cannery and canned a large number of plums. Next year he expects to set out 5,000 peach trees of the early fruiting varieties on the grounds of the Suburban Orchard, Parks and Scientific Home Garden Co., of which he is manager.

E. E. FAVILLE.

Roses should be planted in a deep, rich, well-drained soil, so that the top roots are not less than two inches below the surface, and should be severely pruned every spring before the buds start, cutting back the last growth to three or four buds, except Climbing Roses, which may first be allowed to partly cover the space desired. Old decayed branches should never remain. Every autumn, compost should be placed around the stem of the plants, and spaded into the ground the following spring. After planting, the earth should be dug up around them so as to form a small channel all around the bush; pour into this some liquid manure, mixing the earth that has to be replaced in with it. A small quantity of liquid manure given to the bushes in the manner described twice a month, will encourage growth and blossom.

TOMATO CULTURE.

CHAPTER VIII.—(*Continued.*)

PLANTING MAIN CROP AND PROTECTING FROM FROST.

The advantages claimed are as follows:

1. When the plants are set upright considerable loss often occurs by high winds breaking off the plants. When planted by my method there is no such loss.

2. The roots can be planted nearer the surface, and at the same time the stem of the plant can be buried up to where the limbs come out. The stem so buried will strike roots readily and cause the plants to grow more rapidly and yield more fruit. The roots being near the surface, and not shaded by the foliage of the plants, will get the full benefit of an extra amount of heat from the sun, which will cause them to strike new roots quickly and consequently to grow rapidly.

3. When late spring frosts occur, as they often do, the plants can be readily covered with the soil so as to make them perfectly safe from frost as follows: Raise the plants up and draw the soil under them so as to raise it about two inches above the surface. Now stand on the north side of the plant and with a hoe draw the soil carefully on the plant, covering the stem first and finishing at the top of the plant. Cover about three-fourths of an inch deep and they will be safe from the most severe spring frost that may come. If the next day continues cold and there is danger of frost the second night, the soil may be left on until the next morning, but it should never be left on longer than necessary. To uncover the plants kneel down on the north side of the plant and use both hands, one on each side, draw the soil off in the same direction in which the plant lies; shake the plant up lightly and the work is done.

Long experience has taught me that the above plan is the cheapest, safest and quickest way to protect plants from frost. If by any mishap plants are partly frozen, they will seldom yield a profitable crop. Even when not more than one-fourth of the plant is frozen, the rest of the plant will be so chilled and stunted that it will take a long time to recover. If good plants are on hand it will be best to pull out all such plants and promptly replace with others.

CHAPTER IX.

AFTER CULTIVATION OF MAIN CROP.

As soon as the weeds can be seen springing through, take a good one-horse cultivator, set it wide and go through them once a week, or oftener if required.

Cultivate about three inches deep the first time, and an inch deeper and a little narrower each time afterward. Use the hand hoe freely between the plants, keeping them perfectly free from weeds. After cultivating them three or four times over put the small moulding steels on the cultivator and throw a moderate quantity of soil close up to the plants. The soil should be drawn in around the plants with the hand hoe. Repeat the operation after a week or ten days. The earth around the plants when finished should be two or three inches higher than the centre between the rows, and the hills should be broad and rather flat. Be careful not to hill them too heavy or make the hills sharp. Just before the vines get so close together as to be in the way, set the cultivator teeth pretty close, about eighteen or twenty inches apart (without the moulding steels) and cultivate the centres of the rows seven or eight inches in width perfectly soft and mellow. This last cultivating will save the plants from suffering from the drouth in very hot weather. When the plants lack moisture at the roots and the weather is very hot, a dry rot affects the fruit on the face. I may say here that, in my experience, I have found that clear red tomatoes are more free from rot than those of other colors. If manure enough could not be obtained before setting the plants, use about two tablespoons of nitrate of soda; scatter it directly over the roots of the plants just before drawing the earth around them. Or a large handful of unleached ashes, used in the same way, will be found a good dressing for them. This will give the plants a vigorous start, and help them to be more fruitful.

(To be continued.)

S. H. MITCHELL.

St. Mary's, Ont.

Underground Irrigation is often more useful than water applied on the surface, for small fruits and forced vegetables, especially the strawberry when the plants are developing fruit. The sinking of empty flowerpots here and there through the plot, and keeping these filled with water, which gradually soaks out into the surrounding ground, may answer for a small plot of berries, but for a larger area the plan suggested in the accompanying illustration will be found more serviceable. Bewteen every second row of plants is laid, a few inches below the surface, a row of drain tiles, the first one in each row coming to the surface. With a hose each row of tile can be filled in a moment, and the water will be absorbed by the earth and reach the roots of the plants as needed, and there will be no baking of the surface soil. If desired, the first row of tile could be extended around through the various rows, and the whole filled from one point. A modification of this idea is used with many other crops.—American Agriculturist.

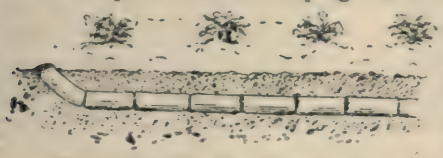

FIG. 766.—TILE SUB-IRRIGATION.

STRAWBERRIES.

IT took me ten years to learn to grow strawberries, so that a good crop of fine berries could be depended on with reasonable certainty every year. The three principal reasons were varieties not suited to my soil, lack of potash in the ground, and allowing the plants to stand too thick. Of a good many varieties tested thus far, the best four, all things considered, are Jessie, Haverland, Bubach No. 5, and Sharpless, in the order named. Our strawberries, following a crop that has been grown on a well-manured clover soil, need no fertilizer except potash, and this is supplied by a moderate dressing of unleached wood ashes. The plants are set in April, just after growth has begun, in rows four feet apart, and two feet in the row for vigorous growing varieties, and eighteen inches for those that do not throw out many runners. My experience is that to produce the finest berries, the plants in the matted row should be six to eight inches apart. Not one farmer in a hundred will take the pains to thin them, and I am not that one, but I can approximate to these distances by thin planting. The past season being so extremely dry just at the time the sets should be forming, we failed to get a good stand of plants. But this is the first time it has occurred, and we shall not abandon the thin planting just at present.

Before setting, the ends of the roots are taken off by a slanting cut with a sharp knife. All dead leaves are picked off. The most satisfactory method of planting we have ever tried is to stretch a line lengthwise of the plat, one man sinks a spade near the line at an angle of about forty-five degrees, and raises the handle nearly straight up, while another straightens out the roots, dips them in water, and puts the plant behind the spade in a natural position, with the crown a very little below the surface. The first then withdraws the spade, and firms the ground by treading firmly just in front of the plant. As a rule, not more than one plant out of four or five hundred fails to grow. Almost immediately the cultivator (with narrow steels) is started, and the whole of the surface is stirred every time we cultivate the garden or after every rain. No fruit is allowed to set the first season, and the runners are kept off until about the first of July. Sets are then allowed to root in a row about two feet wide, care being taken to always pass with the cultivator the same way so as not to disturb the young plants.

I have never heard of clover straw or haulm being used for the winter mulch, but find it an excellent thing for this purpose. The broken straw and chaff sifts down among the plants, and the course straw above serves to shade them and hold the snow. In spring, the coarse straw only is raked off and the rest is allowed to remain on the rows to hold the moisture and keep the berries clean. We hire all the berries picked and sell nearly all of them direct to

consumers, there being a splendid demand for them right at home from passers-by, from wealthy farmers in the neighborhood, and callers from villages near by. Then we are nearly always behind orders from rich people in our county seat, who are willing to pay a good price for something that exactly suits them. These are sent in every morning by U. S. mail hack. But we make it a religious duty to eat all of the best we can at home.

Besides these two acres used in rotation of garden strawberries and clover, we have about an acre of other fruits, raspberries, blackberries, currants, gooseberries and grapes. These three acres are what make life on the farm pleasant and attractive, besides each year they bring in a sum of money that is not to be despised. Since we have learned how to manage them, they do not cause us much worry nor require any great amount of labor. If we were compelled to go back to the old way, and were denied the pleasure and the profit of these three acres, I think that I wouldn't live on the farm at all.—Practical Farmer.

APPLE-TREE BORERS.

A writer in Farm and Home says: "For many years I have practised each season, washing my apple trees to secure against the attacks of the tree borers and bark or scale lice, all of which enemies of the apple tree are very widely distributed through the country and no less harmful. I have found that the same specific, applied at the same time, is equally efficient against all the enemies—Saperda Candida, Chrysobothris femorata, and Mytilaspis pomocorticis—it goes without saying that we cannot afford to neglect so valuable a remedy. June is the month when the lice hatch, and when the several borers lay their eggs. Hence June is the month to apply the remedy. I always make the application the first week of June, and have some years repeated it the first week of July. I used to use soft-soap, either clear or slightly diluted with water. In this way I kept my trees almost wholly free from the insects, while neighboring trees not treated suffered seriously. Late years I have modified the substance by adding crude carbolic acid. I boil one quart of soft-soap in two gallons of water, and while still hot thoroughly stir in one pint of the acid. This is no better than the soap, only as I have thought it might retain its virtue longer, and so be more efficient in case only one application is to be made. In the use of this, however, we must not touch the foliage or we will destroy it.

To make the application I roll up my sleeves and by the use of a cloth thoroughly scrub the trunks and main branches of the trees. In this way it takes but a short time to treat an orchard. If any one objects to this hand-to-hand combat he can take a common shoe-brush with a handle, and thus do quick and thorough work. I do not believe any one can afford to neglect this treatment, especially in orchards which are young or just planted.

CULTIVATION AND CARE OF THE FRUIT GARDEN.

AFTER fruit trees have been planted they should be thoroughly and frequently cultivated. In short, the fruit garden should be worked in much the same way as the farmer works his corn or potatoes when he desires an extra fine crop. The trees should be cultivated for four or five years, when after this time the ground may be seeded in clover, but the small fruits must be cultivated every season, early and late, and the ground kept entirely free from weeds, if good crops are desired. While trees and bushes are small, the ground between the rows may very profitably be occupied by summer crops of vegetables, as potatoes, cabbage, or sweet corn, the only precaution to be remembered being to replace with fertilizer all which such crops may extract from the soil.

The best plan of pruning trees is to remove a branch whenever it is seen to be out of place or to be crowding others. The earlier this is done the better, as it will produce less injury to the tree. There is probably not much difference as to the time when a regular pruning is given the orchard. Some prefer the spring to the autumn or winter. Possibly the early spring is the safest time for this work. Pear trees need very little pruning, and cherry trees do not endure severe pruning. Suckers must be carefully removed from the apple trees. Peach trees may have from one-third to one-half of each year's growth removed with profit every spring. Peach trees, like grape vines, stand a good deal of pruning, and are benefited by it. Raspberries, blackberries, gooseberries and currants all do best when thoroughly pruned. Stakes are unnecessary for any of these bushes if the young shoots are cut off when they reach the height of two or three feet. Extra fine crops are to be secured only through a liberal use of the pruning knife. The soil in the fruit garden should be fairly good before the trees have been set. Afterward stable manures should not be used in large quantities, except on the berry bushes. Wood ashes, bone dust, and the salts of potassium will give the best results applied to grapes, apples, pears, peaches and plums. These plants are little benefited by stable manure, as wood is produced at the expense of fruit.

Many persons do not grow fruit on their farms, thinking that it is no longer possible to control the ravages of insect pests. In this they are mistaken, for at present almost every form of insect may be quite perfectly controlled. The fruit trees should be examined every spring for the eggs of caterpillars, and then by scraping the earth away for a few inches around the trunk of each tree, search should be made for borers. If the ground is kept loose and free from weeds about the trunks of trees, and heaped up three or four inches at the base of each trunk, there is usually very little trouble from borers. The currant worm is easily combated by dusting both the currant and gooseberry bushes

with powdered hellebore. This substance destroys the worms completely, and is not poisonous to human beings. For the curculio and the codlin moth, the best treatment is to spray the trees just after the blossoms fall in the spring, and two or three times subsequently during the growing season. In this way these pests can be kept in control. Some growers still practice jarring the insects off the trees upon sheets spread upon the ground to receive them.—American Agriculturist.

Early Vegetables.—If one has any means for forwarding his vegetable plants, he can do much to hasten his crops. Not many farm-gardeners make use of hot-beds or cold-frames, yet these, by starting their plants in window boxes, can gain some weeks in earliness over those who sow their seeds in the open air. Vegetable seeds are hardy and tender. Those of the hardy class may be sown this month, while the tender kinds cannot be safely sown until the time to plant Indian corn. The vegetables belonging to the hardy class, usually cultivated in family gardens, are : beet, carrot, cabbage, lettuce, onions, parsnip, parsley, peas, radish, turnip and spinach. The seeds of any of these may be sown in the open garden as soon as the soil is dry enough to be worked. Of course, some of these, especially cabbage and lettuce, are had much earlier by raising the plants under glass and setting out the young plants at the time that seeds are sown in the open ground. By the use of window boxes, one can raise all the plants usually needed in the family garden. Such plants may be purchased, but raising them is cheaper. One who takes pride in his garden will avail himself of whatever means that will allow him to be a little ahead of his neighbors.—American Agriculturist for April.

The Gooseberry.—There are few, if any, varieties of fruit that are more readily propagated than this, and when in addition it is considered that it is easy to cultivate, fruits early, and if given anything like good treatment can be kept bearing fruit for a number of years without replanting, it is evident that in a majority of cases this variety of fruit does not receive the attention that it should. In a majority of cases the plants are set in out-of-the-way corners of the garden, and are allowed to grow with little or no cultivation or pruning. In consequence the results are rarely satisfactory. So with all small fruits. The most convenient way of planting is in rows sufficiently apart to admit of giving the necessary cultivation with the horse cultivator, then sufficient cultivation to keep the weeds down and the soil in a good tilth at least during the early part of the season. With gooseberries more than with any other class of small fruit, good pruning is necessary. Allowing too close a growth favors mildew. The weaker canes should be cut out in sufficient quantity to admit the air and sunlight through the bushes, leaving only a reasonable amount of thrifty young canes to bear fruit. If this is done a good crop is almost certain annually, as no class of fruit is as certain of bearing if good treatment is given.

UNFERMENTED WINE: ITS VALUE AND USES AS A BEVERAGE.

DOUBTLESS, like myself and many others, you have noted with pleasure and approval the sentiments expressed in the Hamilton Templar and Spectator, as well as other leading papers of the country, on the question of unfermented wine or grape juice, and its use as a beverage by total abstainers.

The Templar shows its aggressiveness by taking this advanced step on this question, being the first temperance paper to voluntarily open up the discussion and advocate its use, by an editorial, in its issue of January 4th.

The object being to correct a widely prevailing and erroneous sentiment amongst temperance people, that in order to fully obey the divine injunction to "avoid all appearance of evil" in its application to the question of total abstinence, we must, to be safe, refrain from the use of the harmless and healthful juice of the grape, even though preserved fresh from the press by process of canning, as practised in canning fruit.

The Spectator says, in its editorial following, that the Templar is right, and that it is only the unco gude who hold that the total abstainer's pledge should restrict from the use of cider, etc., fresh from the press, as alcoholic fermentation commences the instant the apple is ground, and that no loophole should be left open for the person pledged, "in a moment of weakness" to thus be led astray and finally back to the gutter.

Let us unhesitatingly say that such sentiment is, in the least, not in harmony with the true facts of the case. If so, we break our pledge every time we make use of sauce, or canned fruit, or eat bread, fermentation having set in; but by the operation of heat applied, under certain conditions, fermentation is stopped and the article is still in a proper state for food or drink, as the case may be.

As practical fruit growers, this question, under recent experiments and developments in the preparation of fruit juices, especially of the apple and grape, becomes of vital interest to us, not only financially, but from the standpoint of temperance and prohibition, and therefore, indirectly, of morality and virtue.

Allow me to say that, having in the past taken considerable interest in the matter, and having experimented along this line, and, with the valuable work done by Prof. Craig, of Ottawa, in the fall of 1893, who kindly put up sixteen samples of unfermented grape juice from thoroughly ripened Concords from my own vineyard, each sample put up under different conditions and formulæ; some of them which he sent me this last fall were very fine indeed, especially one with 1¼ lbs. sugar to the gallon and heated only to 160° Fah, and then immediately sealed.

We have tried this again this fall and find it the nearest the natural flavor of the grape of any we ever tasted. It also keeps well and makes a delieious and refreshing, invigorating as well as harmless beverage. We also put up a quantity at a temperature of 180°, but find it poorer in flavor, as any greater heat than the lowest necessary to preserve it from fermentation rapidly draws off the flavoring material, which is chiefly ether and is very volatile.

The sample put up at 160 degrees should, if put up carefully, find a ready market and be profitable at a price within the reach of the masses, and should make a way open for the sale of all the grapes that can be grown in this country, and should take the place of all fermented or distilled liquors as a beverage and make the way easy for the enforcement of a prohibitory liquor law.

As to the beneficial results of its use, we can say that we have used it in the harvest field and when our men were performing the heaviest labor under the most trying conditions of extreme heat, which produces exhaustion and have found that they were fitted to perform half more than the ordinary day's work with the use of only pure water as a drink. The results of its use being a remarkable degree of freedom from fatigue, thirst and hunger, it being in itself food, drink and strength. Our method of its use is to add about one-quarter to a given quantity or water, when using largely while at heavy labor.

Again, allow me to say, concerning the samples sent us by Prof. Craig, that of one preserved in its fresh state by the use of salicylic acid, when first opened, we found it still more natural in flavor than that preserved by heat at 160°, but after standing a few days exposed to the air, it became very unpalatable, even though it did not ferment in the least; but as the use of this drug is condemned by the British authorities as tending to produce unhealthy conditions of the kidneys, it cannot be safely used as a preservative.

Another fact, concerning the quality of fruit grown on different soils, comes to light by the use of the lactometer, an instrument which tells the amount of sugar per gallon in the juice of the grape. The grapes grown on the heavier soils showing much more sugar in their composition, thus proving their greater relative value as compared with those grown on cold sandy loams, and hence should bring a proportionate higher price. Would not an inspection of grapes in this particular prove just to the growers, as well as to the consumer.

The lactometer enables the manufacturer to make a standard article of all well ripened grapes, by first finding the amount of sugar in the grape, and then adding sugar to bring it up to the right standard.

A report from Prof. Craig, with his opinion of it, would be valuable information. Hoping to hear more of this matter through your columns, I remain your humble servant,

Fruitsland. JOSEPH TWEDDLE.

NECESSITY OF FEEDING TREES AS CAREFULLY AS THE STOCK.

I AM no chemist. My knowledge of fruit culture and the manures suitable thereto is purely empirical, or as we like to say, practical, writes O. W. Blacknall in the Connecticut Farmer. It is founded on the careful experiments and observation of near twenty-one years. Long before I knew anything about the properties of plant food I noticed that some fruit trees and grape vines on the place bore abundantly of fine fruit, while others bore none, or had the fruit to rot on the trees. This puzzled me a good deal, for there was apparently but little difference in the quality of the soil, all of it being fairly good, and the other conditions seemed the same. After some years I discovered what made the difference. The trees that bore the best fruit, the most of it, and rarely failed, were the trees that were from choice well supplied with potash. This set me to thinking and inquiring. They told that kainit was the great and economical source of potash. I bought it and applied it attentively to peaches, apples and grapes; first to only a few trees at the rate of two or three hundred pounds to the acre, which amount I have since much increased. On sandy soil I find that it is needed in larger quantities than elsewhere, though it pays well on all soils that I have tried it on.

I use from five to six hundred pounds per acre, with three hundred pounds ground bone. I am a great believer in kainit for fruit, not only as a manure, but as a preventive of disease and destructive insects. While it cannot take the place of spraying for peaches and grapes, it gives the trees and vines so much vigor as to enable them largely to resist the tendency to disease which often lays them open to the attack of parasites.

There is a peach orchard here which, excepting in the great freeze of 1894, has not in many years failed to bear quantities of the most superb Amsdem June peaches; while other orchards fail two years out of three, that has hit every year, with the one exception named. The owner is a believer in feeding his trees as well and carefully as his stock. He uses ground bone and kainit freely, but no ammonia except occasionally turning under a crop of cowpea vines.

For eleven years I have been largely engaged in strawberry culture, having now in about seventy-five acres. Here I use the dissolved bone, instead of bone dust, as the former is quicker in its action, as suits the needs of this crop. I find that six to seven hundred pounds per acre pays me well. Kainit or muriate of potash I find even more necessary on strawberries, blackberries and raspberries. It not only makes large and fine crops of berries, but also lessens the tendency to rust and blight. On some lots I could not plant strawberries at all for the ravages of white grub, did I not use kainit regularly. It drives them away, and also the cut worm, which is sometimes a ruinous pest. I use six hundued to eight hundred pounds kainit, or three hundred to five hundred pounds muriate of potash per acre, with six hundred pounds dissolve bone, and

two hundred to five hundred pounds nitrate of soda, or four hundred to eight hundred pounds of cottonseed meal in place of the nitrate. I apply half broadcast before crop is planted, half the remainder in November, as top-dressing over plants, and the rest in the same way the following March.

I find the potash in the kainit and muriate of potash not only valuable, but indispensable. It not only makes heavy crops of berries, but gives my plants—of which I sell millions annually—a vigor and stockiness not to be had otherwise.

SMALL BERRY PLANTATIONS.

IN talking with many of the most extensive berry growers in the world, they have almost without an exception told me that after all had been summed up, there was not much clear profit left. One man, who had grown hundreds of acres of strawberries, acknowledged upon being closely questioned, that had he grown ten acres, and been able to give them close personal attention and high culture, he would have had less worry and responsibility and more profit in the end.

The big markets are where the gluts occur, and the consequent losses to the growers and shippers. My experience has taught me that, as a rule, the nearer home they are sold the better. Berries are very perishable; hence the need of haste in getting them to the consumer. The greater the distance between the producer and consumer, the more expense and danger of loss. If one is growing largely it becomes almost impossible to avoid shipping to the big markets in order to get rid of the crop promptly. When the berries are put upon the cars or boat they are beyond the owner's control; he must take what he can get for them, and this is often less than he could have gotten at home. He is certian of one thing, that he will have the freight and commission to pay.

There are thousands of berry growers all over the country, and others who might join their number, who can earn comfortable incomes by selling direct to the consumers in the small towns. There are many who do this now, but the business might be largely increased. Indeed, many of their country neighbors are too short-sighted or negligent to grow their own home supply. There is not one family in ten, even among those who live in the country, that is half supplied with berries. Most of them are glad to buy at least a few, and they will often come and get them, thus saving the cost of delivery. I have often started to town with berries, but before I could get there, people along the road would have bought the most of them.

No doubt the world needs big fruit farms, but it is the small ones that pay the best in money as well as satisfaction. It is not the amount of gross sales that count at the end of the season, but the net proceeds. It is rarely possible to give a very large planting the same degree of high culture that may be given a small one. Therefore, let the large growers be less sanguine and the small ones take courage.—H. E VAN DEMAN in Smith's Fruit Farmer.

HOMEMADE COUNTRY GREENHOUSE.

I AM a farmer's son, but have never been strong enough to do ordinary farm work. Several years ago I began raising a few plants for sale. When the fact became noised abroad, people came from far and near to buy. I had no conveniences excepting sitting-room windows and a few small frames covered with old window sashes. But father came to my rescue, and built a small greenhouse. We have two now, and expect to build another early in the spring, as the indications are that we would not be able to supply the demand for plants this season with our two houses, one 32-ft. long, the other 40-ft, and three large frames covered with 13 hotbed sashes. Our buildings are homemade, much as any farmer could build who is at all handy with tools. The material is almost wholly scantling 2x4 inch and boards. The buildings are double boarded with paper between. We buy the windows and roof sashes, the latter being 3x6 ft.

The house illustrated is my sleeping room at night and my sitting room and work room by day. The posts or studding along the front side are 2x4 inches, 6 ft. high, and set just far enough apart to allow the windows to come between, so no window casings are used. The house is 32 ft. long and 10 ft. wide. It is heated with a 2½ ft. box stove that takes in very coarse wood. The stovepipe runs along the back or north side of the building behind the staging that is under the roof windows. This is not the best method of heating, but will do for those who have not the means to get something better, and I think this building suits my purpose better than if it were built and heated in the usual way, as the benches would then be at an even height and the temperature would not vary so mch in different parts of the building to suit a variety of plants

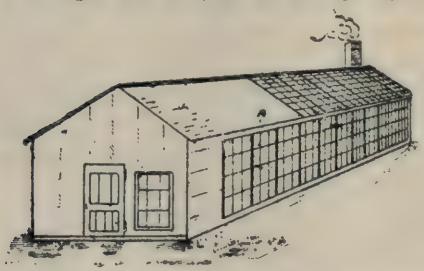

FIG. 767.—WHERE SEEDLINGS AND CUT FLOWERS THRIVE.

On the lower shelves I have pansies, English daisies, and a few roses in pails, the pails resting on the floor close against the bottoms of the windows. Higher up, on shelves which go along the middle of the windows, I have a variety of geraniums and other plants that do not need to be kept very warm, while still higher upon the staging under the roof glass, which is built like a stairway, I have coleus, heliotrope, pinks, more geraniums, etc. There is an east and a north window not shown in the cut. For ventilation, any of the windows may be raised, but as this causes the cold outside air to strike directly on the plants if the south and west windows are open, I generally ventilate sufficiently by the door which is in the west end and the east and

north windows which contain no plants. A great many seedlings are started in this building to be transplanted and moved to other quarters later. In addition to the plant trade, I sell a great many cut flowers in summer to city boarders.—W. F. HEATH, N.H., in Forest and Home.

Apple Pomace as Ensilage.—That apple pomace is of value as a stock food is clearly shown in P. B. 29 or the N. H. experiment station. J. W. Pierce siloed apple pomace in alternate layers with oat straw, the pomace being two inches and the straw one inch thick, and when pressed the whole forming a compact mass like a section of cheese. It was wholesome, clean to handle and with a fruity odor. Its chemical composition compared favorably with corn ensilage and was wholly digestible. Milch cows ate it without shrinking in milk yield, and it was apparently of the same value as corn ensilage when fed at the rate of ten pounds per day per head. Mr. Pierce says that a mixture of pomace and straw fed five pounds per day, with hay, cottonseed and bran, produced nearly double the quantity of milk obtained on a ration of hay and corn meal.

The table below gives the composition of apple pomace ensilage, pomace and oat straw, and of corn ensilage, taken from the silo in March.

	Apple pomace ensilage.	Pomace and oat straw ensilage.	Corn ensilage.
Water	82.03	75.14	80.66
Ash	.91	1.27	1.39
Crude protein	1.45	1.51	1.54
Crude fibre	4.13	6.82	5.14
Nitrogen free extract	10.67	13.98	10.74
Fats	.81	1.28	.53

—Farm and Home.

Galls on Raspberry and Blackberry Canes frequently extend clear around and make the canes double their usual size, and cause a lingering death before the fruit ripens. The next spring a grub is found in the swelling, which later develops into the water beetle that lays its eggs in the early summer on the canes. These eggs hatch, and the young larvæ working into the cane check the flow of sap, which causes the galls. It is far more abundant in the western than in the eastern states, though it may be new in some localities, and may destroy half the crop. As with all insects, there are occasional years when this pest becomes very abundant, followed by years when they are not so injurious. The only remedy known is to cut and burn the infected canes before the larvæ leave the galls in spring. This is very effective if persistently followed up.—PROF. S. B. GREEN, Minn. Experiment Station.

A WHEEL LAND MEASURE.

A device for accurately measuring off any piece of level land is given herewith. An old wheel from some cast-off buggy or other vehicle is required, and may be of any convenient size. Make and fix the handles as shown, so that the wheel may revolve easily on its axis. To use the device, mark one spoke with a strip of cloth or a dab of white paint, and roll the wheel carefully along the desired boundary with a stake or other object as a guide for the eye. Count the number of revolutions the wheel makes as the distance is traversed by the wheel, and by multiplying the number of these revolutions by the circumference of the wheel, the length in feet may be found. To get the circumference, the wheel may be measured with a tape-line or string.—Farm and Home.

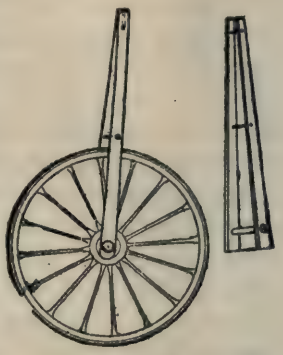

FIG. 768.

ABOUT CULTIVATING ORCHARDS.

The diverse treatment which orchards receive throughout the country affords a lesson showing the great benefit of giving them the best management and the loss from neglected treatment. Neglect is too common, and poor crops and scabby fruit is the result. In contrast with these neglected orchards, are a few to which the owners give the best attention, and who receive good prices for the copious returns of handsome fruit. One orchard of this class, which has grown to full bearing size, affords the owner a handsome profit every year, while his careless neighbors receive not more than one-fourth of his returns. This well managed orchard is kept in grass, which is grazed short by sheep, the grass afforded them being only one-half or two-thirds as much as would give them full feed, the deficiency being made up with grain or meal. This is fed to them regularly in long board troughs. The sheep eat every wormy apple as it falls, and the fruit is thus kept nearly clear from insects. The droppings of the sheep enrich the ground, and a top dressing of barn manure is added yearly. The sales of the fruit from this orchard for many years have been equal to one hundred dollars from each acre it occupies. The shade of the apple trees prevents a rank growth of the grass, and the grazing of the sheep gives it somewhat the appearance of a lawn. The owners of some other excellent orchards, who cannot use sheep, apply yard or barn manure more copiously. In one of the finest visited, the annual application of manure had gradually made it two or three inches deep; the result was a superb crop of apples. Other orchards, with less manure are kept clean and mellow with a gang plow or Acme harrow, to keep the surface clean and in a finely pulverized condition.—Country Gentleman.

CACTUS TALKS.

In commencing our Cactus chats we may presume that in order to understand the care of any plant, it is of advantage to know what its natural habitat is, and under what conditions it thrives and blooms in a state of nature. All Cacti are natives of the warmer portions of the American continent, only one variety, "Rhipsalis," has been found a native of the old world. "Opuntias" have become naturalized there, but all originated in America. Mexico produces the greatest variety. Their season of growth is short during the hot and rainy season, and their resting period long when no rain falls; they are found on barren sandy plains and amongst rocks with scarcely any soil; so the three requisites for success are a sandy porous soil, all the heat possible in summer, and a long period of dryness and rest in winter.

Fig. 769.—Queen Cactus.

The Phyllocacti.

To come to particulars, we will take first the Phyllocactus class as being the most common and best known here; in this class the stems are generally flat, though sometimes triangular, and, as the plant matures and gets age, the stems near the root gradually assume a round shape and become woody. In their native homes they are mostly epiphytal, growing on trees, but non-parasitical, like a good many of the Orchids; but in cultivation they do best in soil, which should be richer than for the round or *Hedgehog* classes; any good soil suits them, if only made porous with sand or charcoal, or both. In summer they enjoy all the heat possible, but are apt to get burned

or spotted by the direct rays of the sun, and, when growing, can take plenty of water as long as the soil is porous and the drainage good ; but remember, that soil kept constantly wet and sodden is certain death to all Cacti, they cannot stand wet feet ; another important point is that large pots are injurious, even if pot-bound they will bloom all the better, and are then benefited by manure water once a week, and syringing or spraying is of great benefit.

In winter give no water unless they show signs of shrivelling, and even then only in moderate quantities, and it is well to raise the soil higher round the stems so that the water will not lodge about the collar. Cacti can be kept growing all the time, but at a sacrifice of flowers, and the plants get weaker. People say : " My Cacti grow all right, but do not flower," and in nine cases out of ten this is the reason. When at rest they can be kept in a light dry cellar, though a better place is a sunny window in a cool room, a temperature not lower than 50° and seldom higher than 55°, with the sun shining on them, is an ideal place ; therefore the nearer we can get to that the better. They are sometimes propagated by seeds, but it is rather a tedious process for amateurs, but are very easily increased by cuttings, especially of the young growth ; lay the cuttings in the sun for a few days until the cut hardens and forms a callus ; this would be death to the cuttings of almost all other plants, but is necessary for them, as if fresh cuttings are inserted in soil they are certain to rot. Sand or charcoal is generally used for rooting cuttings, and after roots are well started re-pot carefully in better soil, but with a good proportion of sand. The writer has had excellent success in getting a loam from a sandy knoll, by skimming off the grass the light sandy loam under is permeated with fine grass roots, this with some clean sand on top makes an excellent cutting bed, the roots push down to the soil and do not require to be removed so soon with the risk of injuring the roots. Tie the cutting to a plant stake, say, two inches above the lower end, push it down until the cutting is in the sand ; keep shaded and dry, only spraying occasionally, and it is almost certain to grow. For size, beauty, and profusion of bloom, for richness and delicacy of coloring, from scarlet to rose, and pure white, this class of Cacti are unrivalled, excepting perhaps by some of the orchids, and considering that they require less care and attention than a geranium, I cannot understand why they are not more generally cultivated. The original varieties of this class were not numerous, but by cross fertilization and hybridizing there are now nearly a hundred different kinds ; some are day, others night bloomers ; of the latter the best is " P. Latifrons," or the " Queen Cactus " (see Fig. 769), with pure white flowers, six to eight inches in diameter, with a delicious fragrance. This plant has only one superior, the night-blooming " Cereus Grandiflorus," but " Latifrons " is much more floriferous.

CACTUS CRANK.

MAKING A LAWN

AS the lawn is intended to be an important and permanent feature of the home grounds it is worth a thorough preparation. A hurried, makeshift method of planting will always be attended with disappointing results. All drains or other provision for carrying off surplus soil-water should be placed, and the soil thoroughly dug or plowed, according to the size of the plot, and well leveled and fined. If the soil is poor in quality, stable manure may be applied at the rate of twenty tons to the acre, and plowed or otherwise thoroughly worked in, but if the ground is in proper condition to grow a fair crop of potatoes, manure should be omitted, as it tends to induce a rank and tender growth of the grass, too soft to endure drouth, and besides is liable to contain many injurious weed seeds. Half a ton of bone dust may be added instead of manure and harrowed in before the seed is sown. The seed is best sown on a very still day, early in spring or about the latter part of August, and lightly raked in; the whole surface should then be thoroughly rolled, or, if the area be small, beaten smooth with the back of a spade. In the preparation of the lawn it is important that a surface at least six inches deep should be uniform all over the whole, except on steep slopes facing the south and west, where the soil should be much better and deeper in order to prevent burning out in dry summers.

Seed should be sown at the rate of *five bushels per acre, or one quart to each 300 square feet*, if a good, quick and permanent turf is needed. When up three or four inches it should be cut and the mowings increased frequently. The oftener it is cut within reasonable limits the softer and finer the grass will be. Mowing alone will not keep it without occasional rollings. Compression of the soil, such as is given by the roller or by the trampling of cattle, is very beneficial to the roots of fine-growing grasses. Rolling should be done in the spring before the ground becomes dry or at any time after heavy rains, providing the soil is firm enough to bear a horse.

The best soil for a lawn is a rather stiff clay loam; sandy soils require more attention and frequent reseeding. The fertility of the soil is best kept up by an annual top-dressing of any good chemical fertilizer, at the rate of 300 to 500 lbs. to the acre, applied just before a rain, preferably in the early spring. An application of about 200 lbs. of finely-ground bone, and 10 to 15 bushels of wood ashes per acre yearly, in separate applications, will also maintain the grasses in sufficient health and vigor. Stable manures are disagreeable and should be used as little as possible.

To grass a bank or terrace.—For each square rod, take a pound of lawn grass seed and mix it thoroughly with six cubic feet of good, dry, garden loam. Place in a tub, and add liquid manure, diluted with about two-thirds of water, so as to bring the whole to the consistency of mortar. The slope must be made

perfectly smooth, and then well watered, after which the paste should be applied, and made as even and as thin as possible.

To Restore Old or Worn Lawns.—In early spring or late August scratch or rake up the bare spots, and sow the seed liberally, using about half the quantity recommended for laying down a new lawn ; cover very lightly and roll, or press down firmly with a board, or back of the spade. A light mulch of clean, short grass or fine old manure may be of benefit if the weather should turn dry. For large lawns a light steel harrow may be used to advantage in stirring up the old surface.

J. T. LOVETT.

Little Silver, N. J.

Propagating Hardy Roses.—The simplest way for amateurs who have no greenhouse to propagate roses is to prune the mother plants hard in spring and then layer them as soon as the young wood has completed its growth, which will be about the beginning of July. Let these layers remain at the parent plant till the fall of the following year, then take them up and transplant them. They will make very strong plants. From cuttings it is more difficult, but it can be done. Have a small sash over a frame, put a 3-inch deep layer of moss into it, pressing it down solid, then put 2½ inches deep of sand on top of the moss and press it firm too, and water it. Then after the middle of June take firm current year's wood, not too strong, three to four inches long, and shorten the leaves, then plant them solidly into the frame, and water them. Keep them generally moist, but give air to dry off the over moistness ; also give a little shade. In fall they can be potted, or, better still, let them alone in the frame till spring, covering it with some rank litter in winter, and from time to time in fine weather ventilate the frame a little. Pot or transplant them in spring.

Budding roses is very easy. The Manetti is still the best stock. Budding can be done about the middle or end of June. Insert the buds as low down on the stocks as possible, even take the soil away from about the neck of the plant to allow you to get the bud in there. But after the buds have taken replace the soil. In spring cut the heads of the stocks back to the inserted bud. After the bud begins to grow, suckers from the roots are apt to show themselves, but remove them as soon as you notice them.—American Gardening.

Ashes for Lawn.—Here is what William S. Egerton, Superintendent of Parks, Albany, says upon this subject :—" Canada hardwood ashes have been used for topdressing the lawns last spring and this fall, two carloads, or some forty tons, having been distributed over the lawns, with the addition of several tons of ground bone phosphate. In this connection it may be proper to question the economy of using barnyard manures, as ordinarily applied in the fall, and raked off in the spring, when these ashes can be secured at $10 per ton. The ashes are as effective when applied, and apparently as lasting in their beneficial effects, with the additional recommendation of being entirely free from noxious seeds."

A HANGING WINDOW GARDEN.

Many people are so situated that their gardens, if they have any, must be on a platform on the outside of some sunny window. Such hanging gardens are capable of affording a great deal of enjoyment. Many, however, are deterred from employing such a miniature garden from the fact that the ordinary frame work that is used for the purpose is too expensive to construct, and is applied much too permanently to make it applicable to a rented house, where many flower-lovers are to be found. The illustration shows how a simple affair can be constructed, and how easily and simply it may be attached and detached from the outside of a window. It is a shallow box, with the inner side left off, the outside being as elaborate or as simple as one may elect. The inner edge of the box is attached to the window frame by hooks and hook eyes, while the chains on either side end in rings that are supported by hooks at the top. Beautiful flowers, and not a few of them, are capable of being grown in such a hanging garden.—American Gardening.

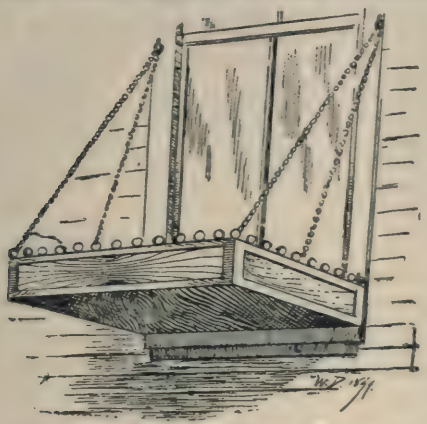

FIG. 770.—FOR A WINDOW GARDEN.

Hardy Bedding Plants.—The tender plants endure but three or four months, but the well selected and properly planted hardy plant bed will open its display in early spring with snowdrops which are in bloom with the first pleasant days, even in March. They are quickly followed by scillas and crocus. Next come the tulips and narcissi, for a month; and before they are past the early flowering herbaceous plants are showing bloom, and the flowering shrubs have begun a display that will only end with the autumn. By May the creeping phlox, columbines, doronicums, Oriental poppies, German and Siberian irises; and of shrubs, the lilacs, spiræas, Japan quince, magnolias, mollis and Ghent azaleas; of climbers, the clematis, in its splendid varieties, open a season that will cover six months. June brings out rhododendrens, kalmias, roses, Lilium candidum and L. elegans. July ushers in Japanese irises and lilies in varieties that will show flowers until frost comes. During that period the tall phloxes, yuccas, rudbeckias, gaillardias, tiger lilies, hollyhocks, single and double, campanulas, rugose roses, day lilies, altheas, hydrangeas, tamarix, hardy sunflowers, and a host of other good things will also add their floral tribute.

When the autumn opens the Japanese anemones and the old-fashioned and hardy chrysanthemums come on and will bloom through early frosts and even early snowstorms.—American Florist.

Care of the Lawn.—Mowing should be done at least once a week in favorable growing weather, and even in dry, warm weather it should be cut twice a month. If the lawn has been properly made in the first place, and top dressed, the weather will have to be very dry to prevent its growth. The best mode of maintaining is the care given at proper times. In the fall it is necessary to give a good scarifying ; this is done with a sharp-toothed rake made for that purpose. This operation is called cultivating. If the grass grows thin in some places, another light sowing should be made, then cover with tobacco stems, if the space is not very extensive, or give a coat of kainit ; this should be applied in December. The scarifying process may be done again in spring, but not very heavy, merely enough to give a good combing all over. If top dressing can be done, good rotted manure may be used, allowing to lay from March to May, and then raked off with a coarse rake.

Weeds are offensive and unsightly ; cutting out of the large ones is sufficient, as the smaller ones are choked by constant mowing. This means perpetuating and caring for a lawn is open for improvement, also varies in different localities. Where fertilizers containing pure bone in majority can be secured at small expense it is advisable to use, and avoid manure from the stable because of its weed producing.—American Gardening.

Sow Cyclamen Seed in pots or pans filled two-thirds with drainage and one-third with loamy soil. Cover the seeds an eighth of an inch deep, set the pot up to the light, but shade from sunshine and keep the temperature at 60° at night. Prick off the seedlings when about three weeks old, and when big enough pot singly into three-inch pots, then into four-inch pots, and finally into five-inch during September. Keep in active growth during spring and summer and do not allow them to dry or rest. A soil consisting of three-parts in bulk of sod loam and one-third of old rotted cow manure suits the plants very well. In fine weather, when not in bloom, syringe daily, in the morning in winter and afternoon in summer. Green fly is troublesome to the cyclamen, but by strewing fresh tobacco stems under and about the plants this insect pest is easily removed. —Farm and Home.

FIG. 771.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

GRAFTING WAX.—A good recipe, especially for outdoor use, is the following:—Melt together 5 parts resin, and 2 parts beeswax; to this is added 1½ to 2 parts linseed oil.

HOW OFTEN TO SPRAY.—Bulletin 84, Geneva Experiment Station, N. Y., says the least number of times to which will give good results is three times, viz., one before blossoming and two after blossoms fall.

FRUIT COMPANY.—At Owen Sound a company has been formed with 5,000 shares of $10 each, called "The Owen Sound Fruit Company." The intention is to buy up the entire apple crop of that region—ship the best, and utilize the remainder for production of evaporated fruit, jellies, vinegar, etc.

THE GRIMSBY HORTICULTURAL SOCIETY (affiliated) held its first open meeting in the Town Hall, on Thursday evening the 18th inst. The hall was seated next the wall only, leaving the centre open for promenading among the six or eight small tables filled with choice house plants grown in windows by Grimsby amateurs. Fine Begonias and Geraniums were numerous, and prominently elevating its head above them all was a fine dark red Amaryllis, and on another table, amid some vigorous Primulæ Obconicæ, was a magnificent Easter Lily. Grimsby's "upper ten" were well represented, and were much pleased with the evening. A brief programme of music was given, and a paper on Floriculture read and discussed. A package of Gladiolus and Begonia bulbs was given each member at the close of the evening. The cut blooms from these Gladioli will make a fine display in September.

THE SAN JOSE SCALE.—It appears quite probable that Canadian fruit growers will be visited by another injurious enemy in this scale, which comes to us from the Pacific Coast. It is so minute, and withal so injurious and so difficult to destroy, that we must needs be well posted in the means of defence. Prof. Howard, U. S. Etomologist, says, that while spraying with kerosene emulsion in summer may prevent this increase, the proper spray for their destruction is a strong whale-oil soap solution immediately after leaves fall in autumn, and again, just before the buds burst in the spring.

Prof. Smith, of the Jersey Experiment Station, says that kerosene, emulsified with soap, is the best spray, made according to the following formula :—

Hard soap, shaved fine	½ pound.
Soft water	1 gallon.
Kerosene	2 gallons.

Dissolve the soap in boiling water, add to the kerosene, and churn with a force-pump until a smooth, white, butter-like mass is formed which adheres to glass without oiliness. The hotter the liquids are when joined, the sooner the emulsion will be formed.

For application against this scale dilute with five parts of water and apply liberally. The kerosene in this mixture does not evaporate so readily as when applied pure, and more opportunity is given to penetrate the scale. The caustic of the soap is also of use in loosening the scale and facilitating the entrance of the oil. An excess of soap in the emulsion is therefore no fault, and the emulsion is apt to be more readily made. The water should be soft for best results in making the emulsion ; but hard water can be used to dilute.

THE RED CANADA APPLE.—There seems to be a difference of opinion among pomologists with regard to the apple which has been grown in Ontario for many years under the name of Red Canada. Samples of this apple have been sent in to this office from various parts of our Province, and all have the same characteristics and are everywhere known as Red Canada. But recently some samples of this apple were sent to Mr. J. C. Plumb, of Milton, Wis., by Mr. R. W. Shepherd, of Como, Que., with the request that he would supply root grafts for distribution among the members of the Montreal Horticultural Society. Mr. Plumb replied that the apple was not Red Canada, but a variety described by Charles Downing under the name of Baltimore. Red Canada, he says, is not hardy enough to succeed in Canada. We give some extracts from Mr. Plumb's letter : " The Red Canada of Downing is a better apple than the Baltimore, but not hardy in Wisconsin. I have not tried to grow it for twenty years, but still we find it occasionally on our lake-shore regions. The Baltimore of Downing and the Flushing Spitzenburg are the same apple. Warder and Elliott, our two best authorities, agreed on that twenty-five years ago. About December, 1879, I settled this whole matter with Downing, and have his letters

on file to show for it. The Baltimore we have grown for over forty years in Wisconsin, and now find it fruiting all over Southern Wisconsin. Let me say, also, that Mr. T. T. Lyon, President of the Michigan Horticultural Society, agrees with me in this distinction between the two apples. I can easily see how sensitive your people may be with regard to changing the popular name of a fruit. I would suggest that in your future lists you use Red Canada as a synonym only, that is, after you are fully decided upon this matter."

In order to settle this matter, we have ordered from Mr. J. C. Plumb, grafts of his Baltimore, and from Mr. T. T. Lyon, grafts of the Red Canada. This will be grafted side by side by Mr. W. H. Dempsey, at our Bay of Quinte Experiment Station, and we hope in the course of time to be able to satisfactorily settle this matter concerning the identity of the Red Canada which we grow in Ontario.

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GRADING APPLES.—Considerable opposition has been manifested in the Ontario Legislature against Mr. Dryden's Bill *re* the prevention of fraud in packing fruit. This bill provides first, that apples and pears shall be graded into first and second classes, these classes to be the same as those which were some time ago agreed upon by the Fruit Growers' Association and incorporated in the Dominion Inspection Act. The name of the grower is to be stamped upon the package along with the grade as a guarantee of good faith, and in order to identify the shipper, in case the goods are not true to the grade marked upon the outside of the package. The bill further provides that all kinds of fruit shipped to market shall be uniform in character with the top layer in the package, or, otherwise, the packer will be liable to a fine. Owing to the opposition from shippers who do not wish to be compelled to grade their fruit, the important sections, providing that apples should be graded, have been omitted from the bill, at least for the present.

In our opinion there would be a decided advantage to the fruit growers generally in having their fruit uniformly graded. Canadian apples will never take the place they should in foreign markets until some means is adopted by which fruit shall be somewhat uniform in quality, and we know of no better plan than by adopting certain grades and making shippers liable to a fine if their goods are not up to the grade marked upon the package.

The only possible objection which any grower could have to the bill is the provision making it compulsory that he should mark upon the packages of apples and pears grade No. 1 or 2, as the case may be. In some instances the shipper might prefer not to mark his fruit according to the grade, or he might wish to ship it in bulk without separating the grades one from the other. This will be a good question to submit at the next meeting of our Association to be held next December, at Woodstock, when no doubt the whole bill will come under review.

Defining the grades appear to us a most important provision, because, as

things now are, each shipper has his own idea of what is meant by grades No. 1 and 2, and the grades, therefore, mean nothing to the buyer. It is most important, therefore, that the grades be defined, in order that buyers and sellers may know what is meant by them. Some think that it is too much to require apples under grade No. 1 to be entirely free from scab, and that it should read "nearly free," in order that apples slightly affected might be included. This, it appears to us, would give too much liberty and might lead to lowering of the standard. Let us hope that with the application of Bordeaux mixture we shall be able to grow apples in Ontario that shall be entirely free from this disfiguring scab, and then we shall without difficulty be able to make our grade No. 1 a credit to our country.

THE PLUM KNOT and Peach Yellows Act has been amended in such a way as to provide most effectually for their destruction. On request of fifteen ratepayers, the Council of any municipality is obliged to appoint an inspector, who has full power to have the diseased trees speedily and totally destroyed. Late scientific researches also lead us to hope that the faithful application of Bordeaux mixture will prevent this fungus from spreading. Prof. Maynard, of Massachusetts, is the first who has experimented in this line; he found that the number of warts were *very decidedly* less where the trees were treated with copper mixture than when untreated. A thicket of Morello cherries, treated two seasons, only produced 165 new knots, while a portion untreated yielded 3,466 knots.

Question Drawer.

Begonia Raising.

732. SIR,—Do the different species of begonias require to be pruned during the winter, especially those which lose all or most of their leaves?

R. LIGHT, *Kingston.*

Reply by Prof. Hutt, O. A. C. Guelph.

Begonias vary considerably in their habits, and their treatment should vary accordingly. The tuberous-rooted kinds, which lose all their leaves and stems after blooming, require no pruning. Most of the shrubby kinds require only an occasional pinching back during the growing season, to cause them to branch and grow symmetrically. Some of the shrubby kinds, like B. Weltoniensis, which lose part of their foliage when resting, should be cut back at that time to within a couple of inches of the top of the pot, thus causing them to start afresh from the bottom. The large leaved Rex varieties, which are generally allowed to rest during December, January and February, should have their old leaves cut away in March, when they are divided and re-potted.

Stock Mixtures.

733. SIR,—In your March number I notice the first practical directions for making Bordeaux mixture in large quantities. Will the dissolved copper sulphate and the milk of lime keep any length of time without deterioration?

J. H. BENN, *Niagara.*

We see no reason why the solutions should not keep any length of time. Of course it would be necessary to add fresh water occasionally, to make up for evaporation.

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734. SIR,—Do you know of any apple trees that would be likely to stand this climate?

JOHN PARKINSON, *Portage la Prairie.*

Reply by J. Craig, of Ottawa.

Our experiments at Brandon and Indian Head have shown us that very few varieties of the named kinds of apples can be grown successfully at any point west of the Red River. Among those which have succeeded best are the following:—

Crabs.—Whitney No. 20, Red and Yellow Siberian, and Martha.

Apples.—Silken Leaf and Duchess have succeeded best of the named varieties and have done fairly well in some localities, when planted on soil not too rich. In situations like this the wood ripens better and is less likely to be injured by the cold of winter than if planted on the usual heavy prairie soil.

Nitrate of Soda.

735. SIR,—In using nitrate of soda for a special dressing, would it be advisable to mix it with land plaster, or would it be better to apply it by itself?

W. MILLAR, *Oshawa.*

Fertilizers for Orchard.

736. SIR,—What is the best fertilizer for a mixed orchard of apples, pears and plums, that has been planted fifteen or twenty years? The ground has been in hoed crops since planting.

W. H. C., *Newcastle, Ont.*

Apricots not Blooming.

737. SIR,—My Russian apricot has bloomed now for three years and borne no fruit. Can you explain?

H. KLIPPERT, *Stayner.*

We have had similar experience with the Russian apricots and have come to the conclusion they are of little value for us in Canada. The trees blossom too early in the spring and are often caught by early frosts; besides, while young, the tree seems inclined to drop its blossoms and set no fruit.

Tomato Rot.

738. SIR,—What kinds of tomatoes are least liable to rot, and what kinds are freest?

A MEMBER.

Sowing Evergreen Seeds.

739. SIR,—When should evergreen tree seeds be sown?

H. K., *Stayner.*

They should be sown as soon as gathered in the autumn, and kept shaded during the hot weather of the succeeding summer.

Open Letters.

Waterloo Horticultural Society.

SIR,—Our Horticultural Society is so far a great success. We are arranging to make a bed in our public park, tall Cannas in the centre, dwarf ones next, and on the outside Phlox Drummondii, or Coleus. The park is quite a resort in summer, the people from a distance hold picnics there, our band holds concerts there, and it affords as fine a half-mile bicycle track as is found in Ontario. Our bicycle club is trying to get the annual meet here in July, when twenty-five hundred wheelmen will be here. This will make our Society popular and will lead to very much better things in future.

JAMES LOCKIE, President.

Insects and Fungi.

SIR,—My fruit crops have suffered badly from the ravages of insects and fungi, because I did not know how to cope with them. Thanks to your valuable Journal, the weapons have now been put into my hands to fight these two great enemies I am the only one, so far as I know, who is testing varieties of fruit in this section, and I am willing to send you items from my experience at any time, if desirable.

JAMES WITTUP, *Fergus, Ont.*

Lindsay Horticultural Society.

SIR,—The Lindsay Horticultural Society held a very successful public meeting on the 5th of April in the Council Chamber. Mr. J. Cooper, president of the Society, read an excellent paper on horticultural societies and their work. Mr. T. Beall gave a very interesting talk on spraying, in which he advised the fruitgrower to use common sense and judgment so as to spray at the proper time. He also gave the formulae and mode of using the same on different plants and trees. Mr. Beadle, from Toronto, gave a very interesting and instructive talk on plants and plant life in the house and garden, with illustrations, after which he answered a number of questions on growing and the management of bulbs and other flowers and plants in a satisfactory way. Mrs. Speir then read a good paper on flowers in the home and their influence. Mr. Maxom had a fine show of plants and flowers in the room, which gave a pleasing effect. There was a good attendance, but we would like to see more take an active part in this good work.

F. FRAMPTON, *Sec.*

Horticultural and other Institutes.

SIR,—Allow me to say to you that I am much pleased with the ground taken by you on page 108 of March number of CANADIAN HORTICULTURIST anent Institute meetings, namely, holding them for purposes of study and getting of valuable information. Having attended Farmers' Institutes for a number of winters, I am fully satisfied of the necessity of making a change in the character of the evening meetings in many places. I have expressed to Mr. Hodson my views on this subject in general terms, and asked for an interview when he is in Toronto. You are aware that much has been said of late concerning agriculture being taught in the public schools, especially in the rural schools. But the sons of the farmers from 12 to 18 years old do not attend. They are mostly taught by girls, because they are cheap, and the lads do not have any respect for such teachers. To meet the needs of these young men should be the aim of our Institutes, both of the Horticultural and Farmers'. In order to do this they must be made interesting to them. No dry talks about a lot of hard jaw-breaking names will do. No text-book study of anatomy of plants either. Put a plant, say a young wheat on oat plant, or a bean plant, or even a potato tuber into their hands and get them to tell what they find there, and having drawn from them all that each has to say about it, then they will be in a receptive state of mind to listen to what the person conducting the exercise has to tell them about what they have seen or not seen. In some such way I am persuaded the evening meetings can be greatly improved that are now devoted to mere amusement, and a sort of school for instruction in the laws of plant and animal life that lie at the foundation of successful agriculture be eventually worked out. I am requested to go to Lindsay and address their Horticultural Society on the "Cultivation and Care of Flowers in both Garden and House." Here is a subject that cannot be exhaustively treated in a dozen evenings. All that can be done in one evening is to touch the hem of Flora's robe, enunciate a few general principles, and that in such a general way that but little good can result to the members. They should have a series of meetings, so that after discussing general principles their application and modification to particular cases can be illustrated.

D. W. BEADLE, *Toronto.*

Spraying for the Plum Root.

SIR.—There has been considerable discussion during several recent meetings of fruit growers, respecting the dreaded approach of the San José scale.

How is it that more is not said, or rather, that more is not done to stamp out the black-knot which we already have in such profuse abundance in this neighborhood. If anyone may see the knots hanging over the fences along the main road to Beamsville, what may we expect in the background? What are the inspectors doing?

It is well-known that the blacknot will destroy a large orchard in a very short time, (such was the experience of the plum growers of the Hudson Valley), whereas, the fruit growers in California seem to have found a reliable remedy for the scale.

We hope that the matter of the eradication of the black-knot will not be thrown into the shade by the fear of the possible advent of the San José scale.

ALLAN BROS., *Grimsby.*

Box Thorn Hedge.

Mr. A. G. Heaven, of Oakville, sends us the following clipping from an English newspaper, concerning this plant, and suggests that its adaptability to Ontario be tested at our Experiment Stations :—

SIR,—Now, as before, people almost exclusively choose the white thorn for laying out hedges. In a fertile, well-cultivated ground, in a well-qualified situation, fine hedges of white thorns may be raised if they are attentively cared for and regularly topped. But it is very often impossible to offer the necessary requisites before-mentioned, even if we do not spare either cost or labor. Neither in a dry ground, in gray sand, gravel, heath-country, etc., nor in boggy, cold flat-land, in the bright sunbeams on steep slopes, can a good hedge of white thorn be accomplished; and much less in the open acres of northern regions,

where some storms, or the persevering coldness of winter, hinder very much the progress of vegetation. Thence follows that so many failed improvements (plantings) of the white thorn are to be seen. Yet it is the desire of every assiduous proprietor to see his estate solidly hedged in.

The Swedish upright-growing box thorn, however, is tougher and much more unassuming. In 3 to 4 years that plant, being content with every ground, even if it be the most barren one, forms dense and durable hedges.

The home of the box thorn is the northern part of Denmark, Sweden, and Norway, where we find the farms surrounded by stately hedges of that plant, even in such parts where the climate is rough and most unfavorable. The inhabitants of those countries set, therefore, a great value upon the box thorn, which is most advantageously set as layers in the months of March and April. I am ready to answer post-paid inquiries respecting the cultivation of that plant.

P. B. CHRISTIAN, Engineer of Plantations, *Tondern North Germany.*

Horticultural Institutes.

SIR,—The idea you suggested in last month's HORTICULTURIST regarding a school, or institute upon horticultural subjects, I think is an *excellent* one, and I, for my part, would be very pleased to give lectures connected with such work. My three lectures, "Fungi," "Plant-cells," "Fertilization," illustrated with large charts, would be suitable for such meetings.

J. H. PANTON, *Guelph.*

Trenton Horticultural Society.

The adjourned meeting of the Horticultural Society was held in the Town Hall, on Friday, March 15th, Mayor Morrison in the chair. The full number of fifty subscribers have been secured already. The meeting elected officers as follows:—President, R. Fraser; Vice-President, W. H. Berkinshaw. Committee:—J. H. Stewart, W. Jaques, G. W. Ostrom, J. W. Hyde, S. J. Young, W. H. Dempsey, W. T. Wilkins and T. F. Weir.

D. J. Clarke and J. Nicolson were appointed auditors. Meeting adjourned.

Board meeting—S. J. Young was appointed Secretary-Treasurer. It was resolved to make all members of the Fruit Growers' Association.

S. J. YOUNG, *Secretary.*

Our Book Table.

The Report of the Western New York Horticultural Society for 1895 is a book of 174 pages, and as usual contains a large amount of valuable matter. An excellent lithograph of the late P. Barry forms the frontispiece. No fruit-grower shohld fail to correspond with the secretary, Mr. John Hall. Rochester, N.Y., in order to secure a copy .....Dairying for Profit, or the Poor Man's Cow, by Nrs. E. M. Jones, Brockville, Ontario, Canada. A most excellent work, invaluable to Canadian farmers.....Annual Report of the Pomological and Fruit Growing Society of the Province of Quebec, 1894. Secretary, W. W. Dunlop, Outremont, Que.....Twenty-second Annual Report of the Minnesota State Horticultural Society, 1894. A. W. Latham, Minneapolis, Minn., secretary.....New York Agricultural Experimental Station, 12th Annual Report. Peter Collier, Geneva, N.Y., director,....Report of the Secretary of Agriculture, U.S.A., 1893. I. S. Morton, Washington, secretary.....20th Annual Report of the Ontario Agricultural College, Guelph.

CATALOGUES.

Green's Fruit Instructor. Rochester, N.Y. A very amusing and interesting catalogue of fruits.....Fourth Annual Catalogue, strawberry plants and seed potatoes, N. J. Bryan, Mohawk.....Bruce Cataloglue of Seeds, John A. Bruce, Hamilton, Ont.....Niagara Falls Nurseries, E. Morden, proprietor, Niagara Falls South, Ont.

Madame de Watteville

THE

Canadian Horticulturist

VOL. XVIII. 1895. No. 6.

THE ROSE.

THE most coveted and most highly prized of all the flowers! The rose is as easily cultivated, under the proper conditions, as the most ordinary house plant. What the amateur wishes to know is, what these conditions are. The first to claim our attention is the soil: this should be three parts of heavy clay loam, mixed with one part well-rotted cow manure. Each pot should have in the bottom a layer of bits of broken pot or charcoal, preferably the latter, to ensure perfect drainage, without which success is impossible. Care must be taken to press the earth firmly around the roots of the plant, yet not so solidly as to prevent growth. The next essential conditions are light, air, warmth, and judicious watering. A sunny south-easterly situation insures the full rays of the sun, and with the temperature never below 60 degrees, and above that point most of the time, the amateur should be able to grow roses with the professional.

A shaded and cold situation will always induce mildew, one of the rose's blighting enemies. When this enemy appears on the foliage, a little sulphur sprinkled on some coals in its vicinity will aid in checking it. Another pest is the red spider. This can be driven away by ample spraying with water, both underneath and above the foliage, or the plants may be dipped in water, which insures their being thoroughly wetted. The aphis or green fly also needs constant attention. This is more difficult for an amateur to combat than the others, but with care one may easily fumigate with tobacco, by placing the plants in a small shed and burning near them some *wet* tobacco on red-hot coals. The commonest tobacco is the best, and I emphasize the word *wet*, for if it flames,

or burns red, the foliage will be ruined. Now this all sounds very difficult, but in practical experience the trouble will be found to be slight.

A few of the best varieties for pot culture are: Catherine Mermét, a shell pink; Madame de Watteville, a creamy white shaded pink, shading to deep rose at the edge of petals; Sunset, and Perle des Jardines, too well known to need describing; Bride, the most perfect large white known; the old-fashioned polyantha roses, Aggripina and the newer Clothilde Soupert, which cannot be excelled for house culture.

Now, a word about out-door roses: What I have said about soil, light and sunny position inside, applies equally to roses grown outside. Bordeaux mixture applied to foliage when buds are beginning to form, is a preventive of the usual out-door pests, the chief of which are mildew, and the well-known little white fly which works under the leaves.

Do not be afraid of cutting your blossoms. Take off with your bloom a stem of three or four leaf joints. If the blossoms are left to fade on the bush the strength which would produce more flowers is absorbed by them.

The roses should have a general pruning in fall or early spring; all weak shoots being cut back close, and long canes being shortened to make a symmetrical plant.

As to varieties, a few which have been tested in Ontario are: Baroness Rothschild, a soft carnation; Coquette des Blanches, pure white, sometimes pink tinted; Gen. Jacqueminot, a rich crimson; La France, a silvery rose; Pius the Ninth, robust pink; Dinsmore, a splendid red; Paul Neyron, brilliant pink; Perle Blanche, pure white, free blooming.

More anon as to how to get early and beautiful roses without fire or artificial heat.

MARY BASSETT HODGES.

Commercial Greenhouses, Orillia.

Pruning. — Experience has taught me that it would be very unwise to leave a stub in cutting a branch from a tree. If it were left on in pruning, it would eventually have to be cut off at the base, unless left to rot off. Any one who has cut and split cordwood, or handled knotty lumber, knows how these dead stubs injure the tree. If a branch must be removed, let it be done as soon as possible, and like any other surgical operation, with neatness and despatch. Just at the junction of the branch with the main stem, is the spot to make the cut. Then paint the wound, if larger than will be grown over the first year. In Fig. 772 the cut at 1 is too close to the body, and the wound too large; at 2 it is too far from it, but at 3 it is just right.—H. E. VANDEMAN, in R. N. Y.

FIG. 772.

PLANTING AND CARING FOR YOUNG TREES IN AN APPLE ORCHARD.

(Concluded from May Number.)

Mulching.—When the tree is planted, spread around it as far as the roots extend, or a little beyond, a five or six inch covering of coarse stable manure, or other loose material which will act as a mulch. This is particularly necessary in dry soil or in a dry season. It prevents baking and cracking of surface soil and consequent escape of soil moisture from below, and at the same time maintains a uniformity of heat and moisture which is highly favorable to the formation of new roots.

Cultivation and Cropping.—One of the most important factors in determining the profits from an orchard is good cultivation. Sod should never be allowed around young trees. For the first five or six years, some hoed crop, such as roots, potatoes, beans or corn, may be grown in the orchard. The cultivation required to grow these profitably will keep the ground in good condition for the trees, while such crops will yield a return from the land until the trees themselves begin to bear. Never sow a grain crop in a young orchard unless a strip, at least as wide as the height of the trees, is left on each side of the rows and kept well cultivated.

The roots of a tree generally extend as far below the ground laterally as the top spreads above it, and they should be the sole occupants of the ground so far as they extend. Cropping between the rows, therefore, must gradually decrease as the trees increase in size, and should be discontinued altogether as soon as the trees fully occupy the ground.

Cultivation about the trees should never be so deep as to interfere with the roots. Shallow, level cultivation is much safer than plowing. By using the spring tooth cultivator to loosen the ground, and the broad share cultivator to keep the weeds down, plowing may profitably be dispensed with altogether.

Cultivation should commence in the spring as soon as the ground is fit to work, and be continued as often as is necessary until about the middle of August. If cultivation is stopped at that time the trees are more likely to cease growing and ripen up their wood so that it will not be injured by severe freezing. The frequency of cultivation necessary will depend much upon the soil and season. The aim of the cultivator should be to keep the surface soil loose and open, thus providing as a natural mulch and enabling the trees to withstand the injurious effects of drouth at any time.

Manuring.—Manuring an orchard in order to obtain good crops of fruit is often just as necessary as manuring a field to get a good crop of corn or roots. In a young orchard, where hoed crops are grown, the manure applied to grow these profitably will be all that is required by the young trees, as they will get their share of it. The vigor of the hoed crop will be a good indicator of the

quantity of manure necessary for the trees. In older orchards where there is no cropping, the annual growth of the new wood is the best guide in applying manure.

As a general fertilizer, nothing is better than barnyard manure, but it should be withheld where the new growth is excessive, or where the wood growth is at the expense of fruit.

Unleached wood ashes are a specific fertilizer for fruit trees, as they contain all the inorganic elements necessary in producing both tree and fruit. Unlike barnyard manure, they tend to promote fruitfulness rather than excessive wood growth, and may safely be applied at any time.

In applying fertilizers of any kind, never bank them about the trunk of a tree, but spread them evenly all over the ground as far as the roots extend.

Pruning.—One of the first things to be considered in pruning a young orchard is the height at which the heads should be started. Some prefer low heads and others high heads. Either extreme should be avoided. From four to four and a-half feet is a convenient height for apple trees. To have them all alike, cut them back when young to the desired height. Three branches are enough to leave to start the head. Space these evenly, and direct new growth whenever necessary by cutting back to a bud pointing in the direction you wish the new branch to take. The ideal pruning consists rather in directing growth than in cutting out what is grown. Thin out the new shoots as may be required to keep the head from becoming too crowded. Cut out any branches that cross or rub each other, and keep the top symmetrical by cutting back branches growing too fast in any particular direction, as they are often inclined to do on the leeward side.

If an orchard is pruned regularly every year, as it should be, there need be no necessity for cutting out large limbs, and the pruning at any time will be very light. Light pruning may be done at any time during the summer, but for the general, annual pruning, this had better be done early in spring before the growth starts.

Protecting the Trunks from Borers.—One of the most destructive insects to newly transplanted trees is the flat-headed apple tree borer. The mature insect is an active little beetle, nearly half an inch long, which lays its eggs on the bark of the trees, generally on the south-west side. When the egg hatches, the larva eats its way through the bark where it feeds upon the sapwood, sometimes entirely girdling the tree. When full grown it is a pale, yellow, footless grub, over half an inch long, with a large flattened head. The presence of these pests in infested trees may readily be detected by the blackened and deadened appearance of the bark over the parts where the borers are at work.

When borers get into a tree there is no other remedy than cutting them out with a sharp knife, or killing them in their burrows with a stout wire. But prevention is better than remedy, and the injury from borers can easily be prevented. To do so, wash the trunks and larger branches with a mixture of soft

soap reduced to the consistency of thick paint with a solution of washing soda. If just enough carbolic acid is added to give it a strong smell it will be all the more repulsive to the beetles. This should be applied during the early part of June and again early in July when the beetles are most active in laying their eggs.

Spraying.—The whole host of leaf-eating insects which feed on the apple tree, such as the Tent caterpillar, Red-humped apple tree caterpillar, Yellow-necked apple tree caterpillar, Fall web worm, Tussock moth, canker worms, etc., must be fought with Paris green, used at the rate of 1 lb. to 250 gallons of water.

Other insects which suck the juices from the leaves and young wood, such as the aphis, tree cricket and bark louse, must be destroyed by the kerosene emulsion. This is made according to the following formula:—Hard soap ½ lb. (or soft soap about ½ gallon), hot water 1 gallon, coal oil 2 gallons.

Dissolve the soap in the hot water, add the coal oil, then agitate by means of a force pump or syringe for five or ten minutes until thoroughly mixed. If properly made, this, on cooling, will form a jelly-like substance, which, before being used, should be diluted with about fifteen parts of water.

The apple scab fungus, which affects the foliage as well as the fruit, must not be allowed to weaken the young trees before they come to a bearing age. To hold this in check, spray before the buds open with a solution made of 1 lb. of copper sulphate to 25 gallons of water; after the foliage appears, spray three or four times at intervals of ten days or two weeks with the Bordeaux mixture. This, as now used, is made according to the following formula: Copper sulphate (blue vitriol) 4 lbs., lime (fresh) 4 lbs., water 50 gallons or one coal oil barrel.

Dissolve the copper sulphate in a wooden vessel, or in the barrel on which the force pump is mounted. To do this quickly hang it in a little cotton bag so that it will be just below the surface of the water in the barrel. In another vessel slake the lime, using plenty of water, then strain it through a bit of coarse sacking into the barrel containing the copper sulphate. Fill the barrel with water.

If the lime is fresh and pure, it should neutralize all the acid in the copper sulphate solution. To test if this be the case, add to a small sample of the mixture a drop or two of ferrocyanide of potassium. If the lime is insufficient, this drop, when added, will turn brown. In that case lime-water must be added until the test gives no brown coloration.

The Bordeaux mixture and the Paris green may with advantage be applied together, thus forming a combined fungicide and insecticide. To do so add 4 ozs of Paris green to a barrel of the mixture.

All of these mixtures should be applied in the form of a very fine spray. The "Vermorel" and "McGowen" nozzles have so far been found to be the most effective and economical for this work. These may be attached to any good, strong force pump, of which a number of Canadian makes may be found advertised in the agricultural and horticultural journals.

O. A. C., Guelph. H. L. HUTT.

SUCCESSFUL RESULTS OF SPRAYING APPLE TREES.

AILURES in spraying are complained of by several subscribers to this journal, whose letters have been forwarded to me for reply. The parties were not thorough enough in their spraying in any of these cases. The paper I read before the Western New York Horticultural Society (which was briefly summarized in this journal), emphasizes the practical results of using the Bordeaux mixture for apple-scab fungus, and it was a grand success; but the mixture must be applied in vapor form, and must not leave the plant or tree until it drips. Remember that any excess of lime or milk-of-lime does no harm, but has a tendency to make the mixture adhere to the trees and foliage.

In my own case the first application was made as soon as the buds began to swell last spring, when I sprayed with 20 lbs. sulphate of copper and four ten-quart pails of milk-of-lime, dissolved in 150 gals of water, thoroughly mixed and kept mixed. The second treatment was commenced just before the nests of buds opened; in fact some of them were showing the flowers. The third spraying was made when the apples were about half an inch in diameter. The last two treatments were with the same formula as the first, except that a pound of Paris green was added for the bud moth and codlin moth (cankerworm), the arsenic being sure destruction to the latter. On all varieties of fruit trees thus treated the fruit spurs were loaded with perfect fruit, both within and outside the tree heads, while trees not treated bore no fruit at all on the inside branches, and what fruit was on the exterior was scabby and far from good.

Another point in favor of spraying is that it makes the foliage dark and luxuriant, while on the untreated trees the foliage was rusty and brown, and fell early. I also claim that trees not in blossom should be treated with Bordeaux mixture, to insure a healthy crop another year.

I use a tank about 11 feet long, set up high on a wagon, with bottom projecting behind, so a man can stand and work the pump, and two men stand on top of the tank. I have a good, strong pump that will carry two lines of half-inch hose, each about 20 feet long, with a Y attachment, so as to allow two nozzles at the end of each hose. The hose is put on a bamboo pole 16 to 18 feet long, so as to enable one to reach all parts of the trees, for the spray or vapor is so fine that it can only be thrown a short distance. It is right here that many fail in thorough work. I use a brass pump, made at Benton Harbar, Mich., that will carry two lines of hose and four nozzles, and the McGowan nozzle.

I have had as good results in spraying plums and pears as with apples. I don't want to be misunderstood to claim that the Bordeaux mixture will raise

apples every year without other help. The trees must be properly fertilized and moderately trimmed every year. If the orchard is so thick as to interlock, cut out every other row diagonally, which will give the tree sun and air. Then if the rains and cold storms don't wash out the pollen of the flowers at the time of fertilization, there will be no reason why we should not raise as good fruit as in olden times.—ALBERT WOOD, in American Agriculturist.

A HANDY FIELD MARKER.

Regularity is one of the chief features that make a garden attractive. It is not enough that the rows of vegetables be straight, but such plants as lettuce, cabbage, cauliflower, etc., should also have a uniform distance in the row, and with the wider planted ones, if possible, also be in line crosswise.

A convenient little device to mark not only the rows but also the exact places for each plant in the row, we find illustrated in Rawson's Market Gardener's and Vegetable Grower's Manual. Our illustration makes construction much plainer than a wordy description could do. The pins which serve to mark the places for plants in the row are put in with a nut, and may be changed to mark intervals of ten, twelve, twenty and twenty-four inches, if the wheel is made plump 38 inches in diameter. A field can be marked with this implement in a short time, and with little effort. For the purposes of marking the rows for sowing seeds of radishes, carrots, table beets, lettuce, etc., in the house garden, any of the simple home-made garden markers, consisting of a piece of scantling with the necessary number of teeth, and a convenient handle, will answer well enough.

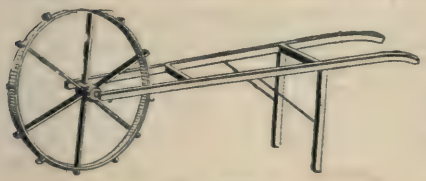

FIG. 773.

Pruning when Transplanting. — The stem should now be put in condition for the formation of the top, by removing all the limbs to the point where it is desired to have the top; then cut back each remaining limb, leaving from four to six buds of last season's growth. In the absence of any limbs suitable to form a top, cut the tree down to the requisite height, leaving the dormant buds to make the top. The business of pruning vigorously at time of setting is generally an ungrateful one to the planter, as it injures for a time the appearance of the tree to an unpracticed eye. It should, however, be unhesitatingly performed, all the branches to the extent of at least one half the length of the previous year's growth being removed. Care should also be used to give the proper form to the tree. The head may be left high or low, as the taste of the planter may prefer, or as the nature of the tree in some cases may require. No stock planted in the fall should be pruned till the hard frost has left in the spring, but before the sap starts.—W. E. Wellington.

COMPLETE MANURES.

THE term "complete manure" is used to name such combination of fertilizing materials as will supply all the elements necessary to normal plant growth. As the principal ingredients needed to support fertility in ordinary farming operations are practically limited to nitrogen, potash and phosphoric acid, a manure containing these three may be understood to be in fact a complete manure. The simple fact that a manure contains these elements is not enough; it must contain them in certain definite proportions. A manure may contain sufficient nitrogen, for example, to produce a yield of 30 bushels of wheat per acre; sufficient phosphoric acid for 25 bushels, and potash for 20 bushels only. Such manure will have an agricultural efficiency of 20 bushels, and the excess of nitrogen and phosphoric acid will, so far as that particular crop is concerned, be wholly useless. Not only useless, but largely lost, as unless the catch crop method is practised, the fertilizing elements not assimilated either take unavailable forms, or are dissipated by drainage and other causes. Even catch crops are but slightly efficacious; the soil, already exhausted of available potash by the wheat, is unable to supply materials needed, and though the catch crop may require relatively less potash than the wheat, this difference between crops is so small that little economy is possible.

The lesson indicated is: The crop producing value of a manure is measured by its lowest fertilizing ingredient. It is true that some soils contain naturally varying stores of plant food in an available form. It is also true that these stores are rarely or never balanced economically. If such supplies were easily measurable, a fertilizer could well be compounded to profit from same; but such stores of plant food are subject to constant change and dissipation; a method of culture giving fair results one season, may prove disastrous the season next following.

It must be understood that these remarks apply more particularly to the farms of the North and East, which have been so systematically exhausted by diversified cropping, that the elements of plant food in any available form are almost uniformly deficient. In the West and parts of the South, cropping has been as yet less searching, either through a lessened period under cultivation, or absence of a wide diversification of crops grown. In this latter territory, instances are frequent in which incomplete manures have been used for many years with some success, but the principle remains the same; the plant must have the chief elements of fertility in certain proportions, in a particular time, and in an available form. By trusting to chance in these proportions, the average of agricultural production has been brought to a very low ebb indeed.

The farms of the East and North have been practically exhausted of their

natural supplies of plant food in such form as to have a specific crop producing value. The constant use of farm-made manures has contributed no little to this exhaustion. The nitrogen of manures is always supplemented by nitrifying organisms in the soil, nitrates in rain water, and other sources; farm-made manures usually contain an excess of nitrogen as compared with the other elements, the formula (under actual growing conditions) in fertilizing language is practically as follows:—

Ammonia,	10
Potash,	6
Phosphoric acid,	3

With many staple crops, this is not a properly balanced manure. The proportions for wheat are: Ammonia, 10; potash, 4, and phosphoric acid, 3. The minerals are deficient as compared with the manure, but the discrepancy is not on the wrong side. With corn, however, the conditions are very different; the proportions become: ammonia, 10; potash, 10; phosphoric acid, 4. Taking into consideration the quantity of ammonia obtainable from other sources than the manure itself, this crop seems fairly well adapted for home made manures. But how is it with potatoes? The proportion in this case is: Ammonia, 10; potash, 14; phosphoric acid, 5—the potash is deficient. Clover is one of the most important crops to the farm; rather, the *most* important one. The proportions for clover are: Potash, 17; phosphoric acid, 5. Clover being a leguminous plant, accumulates a larger part of its nitrogen from the atmosphere. By the continued use of farm manures, the natural supplies of soil minerals have been exhausted. It is well understood that farm-manures contain an excess of nitrogen, relatively. Grain lodges badly by its continued use, without added potash and phosphate. Potatoes produce a diminished crop, or go to vines and produce little or nothing; on every hand are evidences of deficient minerals, particularly in the case of potash.

It follows, that the farmers of the North and East should pay especial attention to the minerals in their manures. Potash is the weak point almost invariably, and measures the crop possibilities, fixes the limit of production, so to speak. Incorporate potash with the home made manures, and also a small portion of phosphate, and the full value of the manure may be obtained; otherwise, the greater portion of the expensive ammonia must surely suffer loss.

New York. P.

The Legend of the Rose.—There is a most sensational story attached to the Gen. Jacqueminot rose. Finding his daughter in the garden in the embrace of a lover he had forbidden her to meet, the General killed him on the spot, his blood flowing where a pale rose bush stood. The daughter soon died of despair, and asked to be buried in the garden where her lover died. Out of the grave grew the blood-red rose that is now called the Jacqueminot.

NEW YORK CITY AS A FRUIT MARKET.

E have received a very interesting and ably written article from Mr. Francis Wayland Glen, of Brooklyn, on the above subject, which, however, we cannot publish in full, because it advocates political union between Canada and the United States. At the present time we believe that the majority of Canadians, of whichever party, are truly loyal to the British flag, and have no desire either for independence or for a closer union with our neighboring republic. This, however, will not prevent our shipping our fruit to New York or Chicago markets, if the prices are better than those in Great Britain. We quote a portion of Mr. Glen's able article, referring to New York City as a fruit market :—

"A few days since, I walked from Broad Street through Exchange Place and at the corner of William Street an old apple woman had just opened a barrel of *prime* Northern Spy apples. She was selling them at the rate of 6 cts. each, or five for 25 cts. They were from Vermont. From there I passed up William Street to Wall, and at that corner a man was selling some *very fine* Easter Beurre pears at the rate of two for 25 cts. He is an old fruit dealer, and told me that he could sell a *great many* of them at 5 cts. each.

I then crossed from Wall to Fulton, and there purchased 25 *prime* Florida lemons for 25 cts. and 20 very fine bananas for 15 cts. On the same stand, fine oranges were selling at 16 for 25 cts.

Near my home in Brooklyn, a grocer had just opened a barrel of *very fine* Baldwins. I asked the price and he said $1 per peck. I remarked that the price was very high. He replied that he could sell ten times as many of the same quality at that price as he could get.

There is not less than 300 good Easter Beurres in a barrel, at 5 cts. each —$15 per barrel ; 300 Northern Spy, of prime quality, at 2½ cts. each—$7.50 per barrel ; 300 Baldwins, at 2 cts. each, is $6 per barrel. This certainly is far better than raising wheat at even $1 per bushel. It will be a long time before the average price of wheat in Ontario will be $1 per bushel.

Our farmers must study and learn the cost of distribution, as well as the cost of production, not only on this continent, but in all competing countries.

The reduced prices of farm produce are compelling the consideration of cheaper modes of distribution. Deep-sea canals are to play an important part in reducing the cost of transportation, in the near future. We probably will never see the cost of moving a ton of merchandise 100 miles by railway reduced below 50 cents, whereas it can be moved by water for 10 cents, or less.

If we take into consideration human power in distribution, as well as animal power and steam power, distribution costs as much as production. In this

Republic we paid to railways and vessels of all kinds employed in *domestic commerce*, in 1894, not less than $2,000,000,000 for distribution. Animal power cost as much more.

A barrel of Easter Beurres at $15 is equal to an average acre of wheat at $1 per bushel. The wheat weighs 900 lbs. and the pears 200. To carry the wheat in flour 1,000 miles, means four barrels at 25 cents each, and freight at 50 cents per ton per 100 miles—$2.25 ; total, $3.25. Freight and package for pears, 75 cents. The pears should be produced, with care, on one-eighth of an acre of land.

Farmers must study how to produce the most valuable product, and at the same time the least bulk and weight.

In the balance of the article, Mr. Glen pictures out Greater New York in 1950:—a ship canal from Oswego to the Hudson river, bringing apples and pears at low rates from Burlington Bay to New York City, all under the auspices of a united flag.

BUILDING A FRUIT HOUSE.

The foundation of my fruit house is of boulders and "slush lime," two feet in the ground all around ; then a wall of hard burned brick 18 inches high and 12 inches thick on the boulders ; Then sills 12 inches wide on the brick wall. Then with close ceiling and weather boarding and brick floor it will be rat and mouse proof. I have sawdust about 18 inches deep on the ceiling overhead. An eight inch square opening in the centre of the building through the overhead ceiling, with an eight inch box over it, long enough to keep the sawdust from falling in, gives sufficient ventilation. This ventilator should not extend through the roof, as a strong draft is not desired. The foul air will pass out at openings between the shingles, etc. Tack a bit of screen well over the top of the ventilator to keep out insects or mice, should any find their way up there. Put a slide on the under side of the ventilator so that all draft may be shut off in extreme cold weather. I think a brick or cement floor preferable to a plank one. Wood would soon rot, and a "dead air" space below the floor is not desirable, as the warmth from the ground would be somewhat held back by it, which is needed in cold weather. A tightly fitting door opening inside and one opening outside, with a wire screen door between them are necessary. One small window with sash and glass inside and out, is sufficient. When fruit is put in, and the weather is warm, a quite low temperature may be maintained by giving all ventilation possible at night and closing up tightly during the day. If extreme cold should continue several days, I used to put a two gallon iron pot nearly full of live coals, inside at night to prevent things freezing. Screen wire over the pot made it safe. I now use a small natural gas jet. I think if the sawdust wall was 18 inches thick, both heat and cold could be the better kept out, though mine is very satisfactory.—Ex.

NOTES ON SMALL FRUITS.

THE progress made in the culture of small fruits during the past twenty years has been rapid and substantial, but even at the present time the importance of this branch of horticultural work is not fully recognized by the people of the State. From the very nature of the soil and climate of Maine we must look to intensive rather than to extensive operations for the most profitable returns. At the present time there is no line of work which seems more promising than that of the culture of small fruits. With the increasing importance of our summer resorts, new and extensive markets are opened; while the operatives in the factories are always large consumers of fruit.

The purpose of this Bulletin and of the succeeding ones is to give brief, concise hints on the culture of small fruits, and information concerning some of the more important varieties.

The essential elements of success in small fruit growing are: suitable location; thorough preparation; the best varieties; careful planting; thorough culture; the application of business principles in marketing.

The Strawberry.

A warm, rather moist, sandy loam is usually preferred in growing this fruit, but in general any soil that will raise a good crop of corn will raise good strawberries. I would not be understood as encouraging neglect in any way, but the minute directions sometimes given for preparing the soil and for planting, are misleading, and are enough to discourage any novice from attempting to grow fruit.

Thorough drainage, either natural or artificial, is absolutely essential, and thoroughness in the preparation of the soil is of prime importance, but the excessive application of manure and the hand labor frequently advised are unnecessary. It is well to grow some hoed crop, as corn or potatoes, on the land for one or two years before setting the plants, as in this way there is less danger from attacks of the "white grub."

The month of May is, perhaps, the best time for setting strawberry plants in this latitude, though good results often follow fall setting. Two very important considerations in setting the plants are, that the crowns be just even with the surface of the earth, and that the soil be pressed firmly about the roots. These points cannot be too strongly emphasized, for to their disregard may be traced more than half the failures in starting new plantings.

For general field culture the "matted row" system is probably best. The

rows should be as long as convenient, that most of the labor of cultivation may be performed with a horse. The plants should be set eighteen inches apart in rows which are about four feet apart. Thus placed, a little more than seven thousand plants will be required for an acre. During the first season thorough culture should be practiced. It is also well to keep the runners cut back till the parent plants are strong and well developed.

Winter protection of the plants is always advisable. The value of such treatment is two-fold: Not only are the plants protected from injury, but the fruit is kept clean and bright. The best material for the purpose is coarse meadow hay cut before the seeds have ripened. We have sometimes used "shingle edgings" with very satisfactory results. In the vicinity of large mills this material may often be obtained much more cheaply than the hay.

On light gravelly soils we have sometimes resorted to the use of boards on each side of the row of plants as illustrated below:

This device is found a very satisfactory means of conserving moisture and will permit the growth of plants in locations which would otherwise be unsuitable. Naturally this device is recommended only for the home garden.

The question of varieties, although of great importance, is one which must be settled largely by individual growers; for the success of any variety will frequently depend on local conditions. It is always a good plan to have a trial ground for the newer sorts, as varieties of much promise at the Experiment Station may prove worthless in some localities.

In selecting varieties for planting it is well to bear in mind the distinction between the perfect flowering and the pistillate sorts. Many of our most valuable sorts are pistillate and must have some perfect flowering variety interspersed in order to secure the best results.

The best of the older varieties are: Bubach, Crescent, Haverland, Sharpless and Warfield, with possibly Beder Wood or Michel's as very early perfect-flowering sorts.

Of the newer varieties the following deserve special mention: Beverly, Dayton, Epping, Gillespie, Greenville, Parker Earle, Princess, Smeltzer.—W. M. MUNSON, in Bulletin 21, Me. Experimental Station.

Smilax does not require direct sunlight, and may be employed to decorate a shaded window, and may also be used to run over picture frames, etc. The tuberous roots may be obtained from florists, or the plants may be raised from seeds. Sometimes three or more weeks elapse before the seedlings are seen. Pot these off as soon as they can be handled, and when the vines begin to run, supply them with strings that they may cling.—Floral Instructor.

COMPLETE FERTILIZERS FOR FRUIT.

IN the composition of the commercial fertilizers now in the market, the fact is recognized that nitrogen, phosphoric acid and potash are the chief constituents of plant food. But in combining them the manufacturers, in most instances, fail to embody any distinct principle or rule of practice. Order will come out of this chaos, through the efforts of those who use the various preparations of plant food.

The time is coming when the general farmer, or the market gardener, will order of the dealer so many pounds each of nitrogen, phosphoric acid and potash, just as now he purchases seeds and foods.

As a suggestion to those who are inclined to mix their own fertilizers, or ask for a definite mixture from the dealer, I offer the following combinations, which may be varied *ad libitum* :

No. 1

Nitrate of soda	15%	nitrogen	350 lbs.
Dried blood	10 "	"	700 "
	2 "	phosphoric acid	
Acid Phosphate	15 "	" "	700 "
Sulphate of potash	50 "	potash	250 "

This combination would contain the following :

Nitrogen	122 lbs.,	or 6 1%
Phosphoric Acid	119 "	or 5 9 "
Potash	125 "	or 6.2 "

No 2.

Sulphate of Ammonia	20%	nitrogen	250 lbs.
Cotton Seed Meal	6.75 "	"	1000 "
	2.75 "	phosphoric acid	
	1.75 "	potash	
Acid phosphate	15 "	"	550 "
Muriate of potash	50 "	"	200 "

This combination would contain the following :

Nitrogen	117 lbs.,	or 5.85%
Phosphoric acid	110 "	or 5. 5 "
Potash	117 "	or 5.85 "

No. 3.

Nitrate of soda	15 %	nitrogen	300 lbs.
Dried blood	10 "	"	600 "
	2 "	phosphoric acid	
Dissolved bone	14 "	" "	800 "
	2.5 "	nitrogen	
Sulphate of potash	50 "		300 "

This combination would contain the following :

Nitrogen	125 lbs.,	or 6.25%
Phosphoric acid	124 "	or 6. 2 "
Potash	150 "	or 7. 5 "

No. 2 would furnish plant food more cheaply that either of the others at this time, owing to the low price of cotton-seed meal.

How shall I know what combination to use? Only by observation and study, and this is possible only when knowing of what any combination is composed. Having that knowledge, and carefully observing the effect produced, it is possible to trace cause and effect. If, in connection with this practice, the farmer or horticulturist carefully studies the results of the Experiment Station investigations, much will be learned of the general principles of such experiments; and, knowing the conditions and needs of his own locality, he can intelligently, and, therefore, more successfully, apply those principles to his own business.—Rept. Mass. Hort. Society.

A TWO-WHEELED BOAT.

Every time you see the old mowing machine beside the road useless and a detriment to the scenery, remember that it may be transformed very easily into a great labor-saver. Draw it on to the barn floor some wet day and take it apart by using wrenches. Remove the wheels and have your nearest blacksmith lengthen the main axle enough to accommodate your biggest stone-boat between the wheels when they have been returned to their places. Then have him make a couple of clamps to fit over the axle and bolt down on the reves. In attaching the boat see that it does not balance, but has a tendency to ride on its nose. Then when loaded and under motion the entire weight will come upon the wheels. This work should not cost more than 60c. to 75c., and will greatly facilitate the drawing of heavy loads for which a boat is commonly used. A most excellent dray has been made by putting the axle within one foot from the rear end, and suspending the forward end to a stick of oak timber 4 x 4 inches and swinging this end under the centre of axle No. 2 belonging to still another old mower. These arrangements greatly lessen the draft. This second axle need not be lengthened. It is easy to fasten sideboards to this low-down contrivance by bolting sticks to them which run through staples fastened to the sides of the boat. For moving sand, earth, stones, for picking up stones, etc., it has no equal.—Farm and Home.

Strawberries.—The varieties mostly grown for market are Bubach No. 5, Haverland, Warfield, Crescent, Sharpless, Beder Wood, Parker Earle, Gandy's Prize, Cumberland and Lovett's Early. Pickers are supplied with stands that hold six baskets, and are made with legs like a stool, about six to eight inches long, nailed on each corner and fitted with a handle made from an old hoop. The pickers are required to bring the berries to the packing shed when the stand is full, and the packer enters the number of baskets opposite each picker's name on a book kept for that purpose At the close of the day's picking, the packer reads out the number of baskets each one has picked during the day. Some growers use the card, and punch out the number of baskets each time, the picker keeping the card. Our plan has always been satisfactory to us.—R. N. Y.

TOMATO CULTURE.

CHAPTER X.

TRAINING THE PLANTS.

When the plants have made a vigorous and bushy growth and are about eighteen inches high it is time to train them. This work should be done just at the right time. If delayed too long the wind may blow them all down in one direction and then it will take double the work to train them, and the work cannot be done as it should be. The way to train the plants is to separate the branches carefully from each other and train them out close to the ground in every direction. Just as the spokes of a wheel point in every direction from the hub, so the aim should be to lay down every limb evenly and regularly from the centre of the plant outward. If in separating the limbs some of them are split down, no harm will be done unless the limbs are split more than two-thirds off. Each limb should be pressed down as near the ground as they will go without injury. I do this work with a three-tined pitch-fork, but a new beginner will have to use his hands considerably until he gets practice.

I am aware that the above method of training is directly the reverse of the methods practised by others. I will, therefore, briefly give my reasons for it.

1. The limbs of the plants, being spread out singly close to the hot ground, receive, when the sun shines, nearly or quite double the amount of heat they otherwise would.

2. The extra heat directly on the stems will check the flow of sap and harden the wood. The result will be to cause the plant to fruit heavily at once.

3. The vines being loaded promptly, the fruit will ripen early, and all the strength of the plant will be thrown into the fruit, instead of producing an overgrowth of vine.

4. The fruit can be gathered in half the time required when there are very heavy vines in tangled bunches.

5. The plants and fruit when laid down close to the ground escape the early fall frosts much better than when they are tied to stakes or have boards or brush under them. When the fruit lies close to the ground it is kept during cold nights fully five degrees warmer than when it is kept ten or twelve inches above the ground.

The truth of this statement is easily tested as follows: On a cold night when a light frost is imminent, take two thermometers that register alike, lay one close and flat on the ground, put the other one on a board elevated a foot above the ground; look at them at daylight next morning and you will find the one on the ground five to six degrees higher than the one on the board. The variation is caused by heat arising out of the ground. If the day previous has been

warm and sunny, the earth will have absorbed more heat, and consequently the difference in favor of the thermometer on the ground will be more than if the previous day had been cloudy. The difference of the five degrees of heat on the fruit during cold nights, just when the fruit requires it most, is a great advantage, causing the fruit to ripen much faster, and the quality to be far better.

CHAPTER XI.

HOW TO MAKE A WHEELBARROW AND LARGE BOX FOR THE BARROW.

When the fruit is ready to gather, the first thing wanted is a light, first-class wheelbarrow. The ordinary make is about as heavy again as required. They will weigh from 60 to 75 pounds. It will be found that a light wheelbarrow adapted to the work will be a saving of at least one hour each day, which will be equivalent to at least one dollar every ten days. Viewed in this light it will be seen that it is a matter of no small economy to have a barrow adapted to the work. The barrow I am about to describe when finished will only weigh 30 pounds. If made as described it will carry three bushels and will last longer than the heavy-made one. The wheelbarrow and tomatoes will weigh 200 pounds. If put on the heavy wheelbarrow the man or boy would have to push a load of 40 pounds extra each way, every trip to the field and back. Now if a man could wheel in 60 bushels a day with a 70-pound wheelbarrow, with less expenditure of strength he could wheel on the light wheelbarrow 80 bushels.

DIMENSIONS OF THIRTY-POUND WHEELBARROW.

Height of wheel	20 inches
Width of tire	1¼ inches
Length of axle, inside measurement	12 inches
Length of handles	4 ft., 9 inches
Size of handles	1½ by 1¼ inches
Width between handles inside at ends	20 inches

Bolt a block of hickory wood on lower edge of handle 2½ inches deep and set the axle of the wheel in it, 1¾ inches below the handles. Three cross bars 1½ by 1⅛ inches; the first bar one inch behind wheel; the second 21 inches behind the first bar, outside measurement; the other bar in centre. Fill in the bottom between the handles with the best pine lumber slack ½ inch thick and 21 inches long. Set on dashboard on a square with the bottom, made of half-inch pine and 10 inches high. Legs 1½ inches square and 15 inches long from top of the handles. Make frame of very best second growth hickory or white

ash and put tennons together with white lead. Iron off with light braces of best Swede iron, and give two coats of good paint. If wheel is made light and edges neatly dressed the weight should not exceed 30 pounds.

BOX FOR USING ON BARROW.

End pieces ¾ inch thick, 6 inches wide and 2 feet 5 inches long. Make a hand hole in the centre. Nail on for sides two pieces ½ inch thick, 5 inches wide and 3 feet 7 inches long. Nail flush with the bottom. Cover the bottom with good half-inch lumber, and champer off the ends even with the sides 5 inches back. Make as many of these boxes as required. They will hold about three bushels when filled level with the sides. When wheeled in, two hands can set them off. They can be piled up over each other as high as desired. These boxes are made just the right size to hold six half-bushel picking-boxes. And if enough picking-boxes are on hand, it is much the best to set them, when full, directly into the barrow box, and when wheeled in, set them off and fill up with empty ones. Then the tomatoes can be wiped directly out of the picking-boxes into the market boxes.

(To be continued.)

St. Mary's, Ont. S. H. MITCHELL.

Numbo and Paragon Chestnuts.—Among the twenty or more varieties of foreign parentage which are now being propagated under varietal names, the Numbo and Paragon are probably the best known, and have been the most widely disseminated. They are both of what is usually termed the Spanish type, having large leaves, coarse sturdy twigs covered with smooth, dark yellowish brown bark. Buds, and especially the terminal ones, large and prominent. Burrs large, uniformly thick and fleshy. Spines long, over half to an inch, branching strong and sharp. The Numbo was raised from imported nuts at Morrisville, Pa., about forty years ago, and has been very thoroughly tested. The burrs are moderately large and distinctly pointed; nuts large, smooth, of a light brown color, and like the burrs decidedly pointed; of fair quality for a nut of foreign parentage. Tree hardy and prolific even when young.

Paragon: origin uncertain but said to have been raised from a foreign nut in the garden of a gentleman residing in Philadelphia. Burrs of extra large size, from four to nearly six inches in diameter, but the spines are enormously long, or about an inch, and are very strong and abundant. The burrs are broad, flat or slightly depressed on the top; nuts large, broader than deep, smooth, with several very prominent ridges extending from base to apex. Color dark mahogany as soon as mature. In quality much sweeter and of finer grain than the usual run of varieties of European parentage. In growth of tree and productiveness it is one of the very best of its class. The trees appear to be perfectly hardy here in northern New Jersey, where a few years since they were subjected to a temperature of 20° below zero.—American Gardening.

VARIETIES OF RASPBERRIES.

ALTHOUGH liable to damage in winter or spring the Cuthbert still leads as a red raspberry. Marlboro' is a dwarf grower and produces a fair crop of firm good sized berries ; it is earlier than the Cuthbert. Golden Queen, which is a beautiful yellow Cuthbert, is gaining in popularity ; it is equal to the Cuthbert in every way, but most consumers adhere to the red berry.

Shaffer's Colossal is somewhat tender and its dark color makes it almost useless as a market berry. By cooking a few with Golden Queen, the shrewd cook can secure cheap rich colored fruit. I have discarded all except the above ; the older varieties are out of the race now.

Black Caps.—There is a demand for a brighter colored better berry than the Gregg, with canes that are hardier ; an early and a late berry meeting the above requirements is needed, and no one has found it so far as I can learn, by actual test I have tried Ada Palmer and Johnston's Sweet beside Gregg's. The Greggs are there yet, but what was left of the others were ploughed under a year ago. Of the above, the Palmer might succeed in some localities. Hilborn answers better than the older varieties as a mid-season berry. There is room for better Black Caps.

When to Receive Plants.

When spring planting is contemplated, red raspberries, currants and gooseberries, as well as trees, can be received in the fall and bedded in until spring and then planted just so soon as the ground is ready. Mice must in this case be guarded against. If the planter waits till spring and receives stock through agents, the date is apt to be rather late and stock is often in bad condition. In a season like this when a few days separates snow and ice from summer heat, the chances of receiving stock in proper order are not good. If stock is to be received in spring, procure it just as early as you can find some mellow soil to cover the roots.

The plants and trees in your hand and safely bedded in, are just where they ought to be. If it takes you two or three weeks to prepare the ground, you can remove them a short distance and plant safely—even if they have large buds. If the roots get dry or the buds are well started at the nursery or elsewhere, and then subjected to removal, death is quite apt to follow. One of the amusing and annoying answers that we receive when proposing to deliver stock, is to wait, because the ground is not prepared for them. This is no part of the question. If you can find convenient room, any place to bed in stock, the sooner you get it the better. Strawberries may be an exception to this rule, as they (if in large lots) cannot be bedded in to advantage. Evergreens, if obtained near by, may be left until wanted.

Nurserymen are often blamed because trees or plants die. In most cases the planters are much more worthy of blame. Nine-tenths of the planters when exhorted to keep the roots moist and cover them immediately with moist mellow soil when they reach home, will answer: "Oh, no need of that, I am going to plant them at once." They jog home with roots exposed, by which they receive more harm in one mile of travel than in 1000 miles of travel when properly packed.

In conclusion, let me exhort all planters to keep the roots moist and covered while on the road, and to at once cover them with moist soil so soon as they reach home. When ready to plant, take out one or two at a time, prune the roots and tops and plant immediately and carefully. Those who do this will have better fruit plantations and a better opinion of fruit growing, and nurserymen.

Niagara Falls South. E. MORDEN.

WEIGHT OR MEASURE.

On page 147, is a proposal for regulating the size of fruit baskets. In the Pennsylvania Legislature a bill has been introduced to provide for the sale of green and dried fruits, cereals and green and dried vegetables by weight. The bill is supported by the Retail Grocers' Association of Philadelphia, and is as follows:

Sec. 1.—Be it enacted, that it shall be unlawful for any person or persons to sell or offer for sale within this Commonwealth any green and dried fruits, cereals, green and dried vegetables, except by United States standard avoirdupois pound or multiple or fraction thereof.

Sec. 2.—Every person, company, firm or corporate body who shall violate the provisions of the first section of this Act shall for every such offence forfeit and pay the sum of $25, which shall be recoverable with costs by any person suing in the name of the Commonwealth as debts of like amount are by law recoverable; and shall be paid to the proper county treasurer for the use of the county in which the suit is brought.

Sec. 3.—Every person who violates the provisions of the first section of this Act shall be deemed guilty of a misdemeanor, and upon conviction shall be punished for the first offence by a fine of not more than $10, or by imprisonment in the county jail for not more than ten days, or both. Each subsequent offence upon conviction shall be punished by a fine of $25, or imprisonment for one month, or both.

Sec. 4.—This Act shall take effect on the first day of July, A.D. 1895.

Sec. 5.—Provided that nothing in this Act shall apply to any articles that are now sold by count or to the product of any foreign country.

Sec. 6.—All Acts or parts of Acts inconsistent with the provisions of this Act are hereby repealed.

THE YELLOW WARBLER.

OF all the different groups into which our native birds are divided, there is none more interesting than the one called the warbler family. Of these there are many species, all small, and most of them brilliant in color and shy wood birds, seldom or never seen by the ordinary observer. They live among the trees, feeding on the insects, their comparatively slender bills distinguishing them from the seed-eaters or finches, to which family many of our common small birds belong.

One of these species has seen fit to change its habits since the settlement of the country to the extent of leaving the woodland haunts of its ancestors, and finding a congenial home near the habitations of mankind, where it finds food in plenty in the myriads of insects that infest the leaves of the orchard and shade trees, and a place to build its nest and rear its young in comparative security in a lilac or honeysuckle bush, or, maybe, in an apple tree. This bird has been called the Summer Yellow bird, but its proper name is the Yellow Warbler. The confusion of names between this and the other "yellow bird" —the one with the crown, wings and tail black—now called the American goldfinch, is not likely to obtain in Ontario, because the latter is generally known here as the canary, being supposed to be the wild form of our well-known cage bird.

The Yellow Warbler is yellow all over, greenish-yellow on the back and golden-yellow on the crown and underparts. The wings and tail are not entirely yellow, being dusky, with only the edges of the feathers yellow. The bill is dark, and the male is distinguished from the female by light streaks of reddish brown on the breast.

That this bird should be able to see and take advantage of new conditions in its surroundings argues a high degree of intelligence, and it gives us a further proof in its methods of getting rid of the eggs of the cowbird. The cowbird, as we know, builds no nest, but imposes the hatching of its eggs and the care of its offspring on other birds by surreptitiously dropping its eggs in their nests, in the manner of the European cuckoo. Most birds either do not understand the deception, or else are unable to meet the difficulty. The Yellow Warbler proves itself master of the situation by extending the nest upward, with a new floor just over the obnoxious egg, thus walling it in below. All individuals, however, are not equally gifted in this respect. A pair known to the writer built two nests in the same season, to each of which the cowbird contributed an egg. In one case human intervention saved them from a family disgrace, and in the other the only offspring reared was an interesting cow-blackbird.

These nests were made almost entirely of white strings, ravellings and cotton wool, and lined with horsehair. The bird invariably chose the white materials among those of various colors that had been laid out for her. The eggs were four in number, of a greenish-white color, speckled with brown and lilac, the spots being mostly round the large end. In another nest, at the same place, were laid a set of albino, or pure white, eggs. This was an unusual occurrence, though there are many cases on record of albino eggs being found in robins' and bluebirds' nests. During the period of incubation the mother bird kept to her sitting very closely, seldom leaving the nest, and all the while her mate was very assiduous in waiting on her, gleaning among the leaves, his cheery note at intervals proclaiming his whereabouts.

The Yellow Warbler is widely distributed, and probably abounds in all parts of Ontario, though in some places, it seems, he has not yet learned the advantages of associating with human kind, as have most of his species. In this neighborhood, which is near Toronto, he is one of the most familiar birds of summer, while in a locality fifty miles north I found him only in the swamp.

He is oftener heard than seen, and, though his song is nothing to boast of, being short and rather shrill, it is given with such good cheer, combined with an utter lack of self-consciousness that it is always pleasing to the ear. He comes in May, when the trees are dressed in their newest leaves, and leaves us in September, having endeared himself by his sweet, domestic habits, and cheerful, industrious ways, to every lover of birds who has made his acquaintance.—H. G. L., in Globe.

An Example of Border Planting.—A border three feet wide in front of a house was planted with Eulalia gracillina, erianthus, Funkia Sieboldiana and F. subcordata; the last two in front of the first two. As these were selected for form and foliage they were effective throughout the season, and as a contrast, a group of tuberous begonias was introduced, and these have to be planted every spring. The porch of this house was shaded by Halliana and golden honeysuckles, Clematis Jackmannii, C. Henryii and C. panicula. A border at one side of the house was much shaded, and was planted with shade-loving plants, such as native ferns, native cypripediums, trilliums, lily of the valley and tiarellas, and a group of Lilium lancifolium at the point of most light. Another border, in front of a hedge of California privet, has first a line of hardy roses; among these gladioli are planted each season. In front of this line is one of narcissi, of sorts. The rest of the border is filled with hardy herbaceous plants, including columbines, Japanese anemones, iris and lilies, pæonies, German iris Helianthus, lætiflorus, Coreopsis lanceolata, gallardias, rudbeckia hirta, hardy asters, campanulas, phloxes, delphiniums and Heuchera sanguinea. These are grouped in selections to secure a constant succession of bloom. In front of these is a line of tulips, narcissi, etc.; sweet peas, phlox drummondi and nasturtiums are added where space is found. The brick walls of the house are covered by Ampelopsis Veitchii.—American Florist.

CACTUS NOTES.

Epiphyllums.

THE next best known are the "Epiphyllums," or Crab or Lobster Cacti, with flat stems notched as one leaf or stem growing out from another; the flowers are formed at the joints. These are rapid-growing satisfactory plants, and their cultivation, soil, watering, etc., similar to the "Phyllocactus."

As their long slender branches are of a drooping habit they are often grafted on the "Pereskia," or Barbadoes gooseberry (a woody shrub though a cactus and the only species that has true leaves) or on some of the varieties of "Cereus." When grafted on stems a foot high they make beautiful umbrella-like plants, and when covered with blossoms in winter, as they generally are, there are few plants to compare with them. Besides making handsomer plants grafting prevents damping off at the neck, a danger with young plants if injudiciously watered. The original plants of this class were only two, with scarlet or crimson flowers, but they have been so successfully hybridized that there are now many different colors, and even the shape of the flowers has been changed. The original form was two or more tubes growing out of each other, but there are now flowers like a "Cereus," or "Phyllocactus." Every one should have a Crab cactus.

Cereus.

The "Cereus" next claim attention, a large and beautiful class of about 200 varieties with strongly dissimilar forms from "Cereus giganteus," the giant of Mexico, a straight column sixty feet high, to the creeping rat-tail "Flagelliformus," common in dwellings. To attempt to give a description of the numerous varieties would be more lengthy than profitable, as these notes are only by an amateur for beginners in cactus culture.

A large number are of a semi-climbing habit requiring support. Of these the best known are "grandiflorus," "coccineus," "Macdonaldsii," "Nyclicalus," and others, and a description of the first named may serve for this class. "Cereus grandiflorus," "The night-blooming Cereus," "The grandest flower that blooms," are the names variously applied to this plant. The stems are almost cylindrical, nearly an inch in diameter, with four to seven slight ridges or angles, which bear numerous small tufts of wool and short spines. The flowers appear on the sides of the stems, principally the younger shorter ones. The first sign is a little wooly tuft, and you will be unable to know for a few days whether it will be a flower or a branch, but keep in the sun, and if a flower the stem will increase to about six inches in length; watch then for its opening about

8 p.m., to close again forever at daylight. A flower a foot in diameter, bright yellow inside, reddish-brown outside, filled with so many yellow stamens they can scarcely be counted, and exhaling the most delicious perfume, is an object worth striving for and a sight never to be forgotten. People rush in crowds and go almost wild over this grandest of all flowers. The plant is readily propagated by slips of the young growth as described for "Phyllocactus," page 4, May number, and are frequently used as stock to graft other cacti on, but the truth must be told, old plants of this variety are rare, and flowers very much rarer. Those who have a conservatory are more likely to succeed, as by training the stems along the rafters they get the necessary sunlight and heat, and by encouraging them with manure water once a week in summer, their growth is rapid. In winter they should have full sunlight and be kept cooler and dryer, but must not be allowed to dry out entirely. Now, as slips and cuttings are cheap and easily started, every one should try them. Supply these requirements as near as you can, and if you only get one flower you will be amply repaid.

FIG. 774.—EPIPHYLLUM CACTUS.

This class is not all night bloomers. "Coccineus" is a profuse bloomer, flowers six inches in diameter, of intense scarlet lasting several days. The cultivation of "flagelliformus," or rat-tail, is similar to the "Epiphyllums." They are easily grown in any sunny window, and grafted plants especially make handsome specimens. Of the columnar kinds, "Baumanni," "Colubrinus," "Dumorteri," "Peruvianus," and others are good growers, increasing in size, beauty, and value every year. All bloom well and make handsome specimens (see cut of Colubrinus, which is true to life). "Baumanni" is similar in habit, a grand bloomer and the flowers, of a bright vermilion and orange yellow, are dazzling in their brilliancy. Give all the sun heat possible; this class is never injured but always benefited by exposure to the sun, only keep the pots covered or shaded

FIG. 775.—NIGHT-BLOOMING CEREUS.

to prevent the roots from being scorched. Have the soil open and porous and give plenty of water while growing, and weak manure water once a week. Sheep manure is the best, as it seems to be mild as well as rich; cow manure the next. In winter large specimens of the columnar kinds will not require any water unless the place is warm, but the less the better; the semi-climbing varieties must have a little occasionally. The sub-genus "Pilocereus" are a peculiar class, with only a few varieties. "Pilocereus Senilis," "The Old Man Cactus," is the only one of this class generally grown, and is one of the strangest of plants, a wonderful, weird-looking thing, covered with long white hair "like the hoary

head of an old man." Cultivation, same as for other cereus, only lime in the soil in the shape of old mortar is beneficial. When the hair gets dusty or dirty it can be washed in tepid soap suds ; tie a cloth over the pot to keep the soil from falling out, turn the plant upside down and souse until clean, then rinse in clean water and his hair will be white as snow. Do not fail to get an " Old Man," it will be a constant source of wonder and delight to you and all your friends. A new variety has lately been discovered in the rocky islands of the Pacific, " Sargentianus," with hair of a reddish-brown color inclined to be curly. Unlike the Old Man, whose hair is most plentiful and long when young, decreasing with age, this new one does not have hair until it has obtained some age and from two to three feet tall. It is said to be a strong grower, making a heavy fine plant, but is at present very high priced and rare.

CACTUS CRANK.

Gladiolus.—The first planting can be made as soon as the soil is in condition to work, and the smallest bulbs should be put in first, leaving the largest and strongest for the last planting, which should not be made before the middle of July, then they will come into bloom after the excessive heat of summer is over, and the spikes of bloom will be more than double the length and strength of those that appear in July and August. The bulbs for this purpose must be kept cool, and in a dark, dry room. Cold storage would suit them admirably, if the temperature does not fall below 34°. Put some bulbs in as early as you do sweet peas, and plant at intervals of two weeks up to July. Seedlings will bloom the second year from the seed, and 25 per cent of Lemoine's strain will bloom the first year ; they are also the earliest. Cut the bulbs as you would potatoes if you would increase your stock quickly. Light colors are the most desirable. Plant deeply—four to six inches—this saves the trouble of staking ; but do not cultivate deeply.

Staking and Mulching of Sweet Peas.—As soon as the plants are above ground they should at once be staked. This is a most important operation. Nice twiggy new sticks (if possible) should be secured. I prefer the sticks undressed. The delight and beauty of the sweet pea is to ramble and hang from the points of the twigs, and therefore should be allowed to ramble at will ; and what is of the last importance is a mulch of some light material. Should the weather be dry and hot, any refuse, such as well-decomposed leaf-mould, spent hops, or horse-droppings well broken, will answer this purpose, or all these mixed together would form an excellent dressing, and this to the sweet pea, and, indeed, to everything else, is of infinitely more importance than watering, beneficial as this is in some cases. The stakes should be put in with the crowbar, and made thoroughly firm.

RUSTIC SEATS FOR THE LAWN.

THE garden and lawn are incompletely furnished if they are not supplied with some kind of seats whereon one may recline at ease. Fortunately, these seats need not be costly; it would, indeed, show bad taste to have them so. Something easy, graceful, fantastic, rustic—something that the sunshine or the wind will not harm, or have its beauty destroyed by the rain. The materials for such seats are nearly always at hand—at least on every farmer's premises. All that is required is a little skill and patience to construct them. The branches of the red cedar tree and wild grape vine furnish the best of material for this style of rustic seat. Our illustration, Fig. 776, shows a very pretty chair made in this manner. A few pine boards cut and nailed together, as represented in the engraving, Fig. 777, will form a cheap and convenient rustic seat, which will be admired for its very simplicity and quaintness.

FIG. 776.

A favorite shade tree on the lawn may be surrounded with seats so attached that one in sitting may lean against the trunk. Our illustration, Fig. 778, will give a good idea of how seats of this kind may be constructed.

FIG. 777.

The position of such seats is worthy of consideration. As they are mainly intended for use in warm weather, they should be amply shaded.

A position must be chosen that commands a good prospect—if not a distant landscape, then of the beauties of the lawn and the flower garden. Some at least, should be screened from observation by shrubbery — fragrant, if possible, where one may read or work. It is during the warmer months that the garden and lawn offer their greatest attractions, and everything that tends to make them more enjoyable should be provided.

FIG. 778.

Javelle Water, used to remove tea and coffee, grass and fruit stains from linen, is made thus :—Mix well in an earthen vessel one pound of sal soda, 5 cents worth of chloride of lime and two quarts of soft water.

TUBEROUS BEGONIAS.

COMPARATIVELY few persons who cultivate flowers are acquainted with tuberous begonias; a still smaller number know their merits and the ease with which they may be grown. If they were better known they would be sure to grace the borders of many more gardens than they do now, for they never fail to elicit praise from every beholder. As the name implies, their roots are tuberous, and may be dried off during their season of rest, which is in the winter. They may be gradually dried off after flowering. When the stems have nearly dried, they may be cut to within half an inch of the bulb; the soil should then be shaken out, the bulbs spread in a warm, shady place until the roots are dry, when they may be removed and the bulbs packed, right side up, in dry soil.

In March or April they may be planted in pots in the greenhouse, in May in cold frames, or in the open ground in May or June. If grown in the greenhouse, the pots should be one-half inch larger than the bulbs. Keep the pots in a warm and rather dark place until they make some root-growth before the top grows. Keep the soil moist, but not water-soaked. Gradually inure them to the light, in a temperature of 60°. As the plants grow and the pots fill with roots, they may be shifted into larger pots as often as needed until they commence flowering, when they should remain undisturbed. Begonias do not thrive if kept too dry, neither will they bear too much wet. Too much moisture —particularly in cloudy weather—will cause them to damp off at the surface of the ground, which destroys the bulbs. If to be grown in frames, a rich soil is requisite to success. That made from sods and manure composted a year is most suitable, and in it they will thrive and well repay the outlay. Plant the bulbs eight inches apart, just covering the crowns. Cover the frames with sashes, tilting them up on one side from two to three inches, giving them a thin coat of whitewash to keep off the direct rays of the sun. Water when needed, which will be about once a week. For growing outside, a soil like that recommended for frames is best, but in the absence of this, good border soil will answer if a heavy coat of well-rotted manure is spaded in. Plant in the same manner as in frames. Begonias grown in the greenhouse are more liable to be attacked by insects, and, from a lack of good ventilation, are apt to damp off. Grown outside, the plants are more sturdy, with short petioles and peduncles. The flowers are smaller, but of good substance. From being exposed, they are often injured by excessive rains, while, on the contrary, continued dry weather and hot sun will burn them. In frames they grow more luxuriantly, producing larger flowers, with longer petioles and peduncles, and more flowers are produced, which last longer than those grown outside, or in the greenhouse. A frame of begonias, when well grown and full of bloom, is a grand sight.

These beautiful plants are also easily grown from seed, and any one having

the inclination may derive much pleasure from growing a few seedlings. The seed is extremely small and requires fine soil, and should be barely covered, in shallow boxes about two inches deep. Keep under shaded glass, giving air, and never allow the soil to become dry. The seed will germinate in about two weeks. When the plants get large enough to handle they should be pricked out in similar shallow boxes, where they may remain until they have grown to about one inch in diameter, when they may be potted singly in two-inch pots, and shifted into larger pots as they require until fall, when a tuber will have formed, which may be dried off and kept in the same manner as old tubers.

Flowers grow from three to five inches in diameter, and of various shades of white, yellow, red, scarlet, and crimson. Some of the single kinds are marvels for size and gorgeous colors. The double flowers are more regular than the single ones, and in appearance are much like a camellia, but they do not grow to as large a size as the single ones. The stems are usually too weak to support the weight of the flowers, and they drop in among the leaves, so that double-flowering varieties are not as showy as single ones, though they are very popular at present. Those who love beautiful flowers should not fail to try a few tuberous begonias, if they have never grown any before.—American Agriculturist.

To Preserve Scarlet Geraniums Through the Winter.—Take them out of the borders in autumn, before they have received any injury from frost, and let this be done on a dry day. Shake off all the earth from their roots, and suspend them with their heads downward, in a cellar or dark room, where they will be free from frost. The leaves and shoots will become yellow and sickly; but when potted about the end of May, and exposed to a gentle heat, they will recover and vegetate luxuriantly. The old plants, stripped of their leaves, may also be packed closely in sand; and in this way if kept free from frost, they will shoot out from the roots, and may be re-potted in the spring.

The Cyclamen.—Although strictly speaking, not a bulb, we include it in our talks on bulbs, because it is popularly known as such. These are giving us great satisfaction at the present time. Some of our plants in four-inch pots are, and have been for six weeks, carrying from ten to fifteen flowers each, and these from seed sown fourteen months ago. The cyclamen is exacting on two points, full, free sunshine and an abundance of water. They sulk if given a back place in the window, and refuse to flower, and their leaves droop quickly if the soil approaches dryness. Our best specimens are in a pan ten inches across, into which we put six plants in all colors from three-inch pots. For more than two months there has been at all times from thirty to fifty flowers open, which makes it the most showy and cheerful object in our window. We find that a particular soil is not so essential as was formerly supposed. We use common soil from the potting bench, the same as we would for a geranium, and with the best success.—American Gardening.

THE GLADIOLUS.*

I HAD but little idea of the value of gladiolus when I began to prepare this paper, and I think we have been most fortunate in choosing it for our initial effort. It belongs to the order Iridaceæ. The roots are bulbuous; the leaves linear or sword-shaped, from which it derives its name Gladiolus (Latin for a little sword). The Cape of Good Hope produces the greater number of known species. A few, however, are natives of other countries, and two or three are found in Central Europe; none are British. The original species have since been superceded by the very numerous and beautiful hybrids that are in cultivation, though many of the originals are retained, and are useful in the mixed border. The Hottentots eat the bulbs of some species which contain a considerable quantity of starch.

The bulbs should be planted in a rich, light, mellow soil, about the 20th of May, if the ground is warm, and, for a succession of bloom, every two weeks till the 1st of July. A sunny situation with ground well spaded and thoroughly pulverized, is the most suitable. If the soil is heavy, plant from one to two inches deep; if light, three to six inches. If bulbs are planted deep they attain a greater size, and are better able to stand a season of drought. They are moisture-loving plants, and, for that reason, they succeed well in England. I think the finest flowers and largest spikes are obtained by late plainting as they come into bloom about the 1st of October. If planted early, they should have a light mulching of newly-cut grass. It is one of the richest of our summer-flowering bulbs, and so refined and delicate in quality of color that it is never anything other than satisfactory. If you care for a soft, pale shade, you have it; if you prefer the brilliant scarlet, crimson or violet, they are before you in every shade. No garden should be without them, or their gorgeous display of bloom. As cut flowers, they are most satisfactory; and if cut when the first four flowers are in bloom, and placed in water, they will open bud after bud till the whole spike is in bloom. The bulbs should be taken from the ground before danger of frost, put in paper bags and kept in a dry cool place free from frost.

I am sure we will derive a great deal of pleasure from the cultivation of our gladioli. Horace Smith says, "The purest happiness our hearts can enjoy is that which is wafted to us from the hearts we have made happy, even as the flowers which we ourselves have planted ever seem to breathe around us a sweeter and more acceptable fragrance."

NEXT YEAR every fruit grower will either want to spray with Bordeaux mixture, or no one will want anything to do with it. Mr. A. H. Pettit is experimenting in apple orchards in thirty different places, with three gangs of men. Upon the results of such extensive tests will the future of spraying in this Province stand or fall.

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* A paper read before the Grimsby Horticultural Society, by Mrs. E. J. Palmer, Grimsby

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

PROF. CRAIG is conducting special experiments in spraying for peach curl, at our South-western Fruit Experiment Station.

ERRATA—SACCHAROMETER.—On page 171, an unfortunate misuse of words occur, which escaped the notice of the proof reader. The word "lactometer," meaning (an instrument for measuring the richness of milk), is used; when saccharometer, or sugar meter is the word intended by the writer.

PEACH BLOSSOMS are coming out quite abundantly (May 7), after all our fears of the consequences of that cold weather in January, when the glass showed —15°. The Crawford, the most tender variety, is killed, but most other kinds are blooming abundantly. The proportion that is killed by the winter's cold will simply save the trouble of thinning out the fruit.

THE SEASON which opened out rather late has proved to be after all a remarkably early one, owing to the exceeding heat of the second week of May. The bloom of all kinds of fruit trees and plants was rapidly hurried forward, and on the evening of the 12th met with a severe frost, which we fear has largely damaged the prospect for cherries, peaches and grapes, even in the more favored sections of Southern Ontario. (See reports farther on.)

THE EXPERIMENT STATION EXTENSION BILL of the New York State provides for the appropriation of $16,000 to be expended for horticultural purposes in sixteen counties of Western New York. The fund is to be expended in conducting investigations and experiments in horticulture, in discovering and remedying diseases of plants, vines and trees, in ascertaining the best means of

fertilizing vineyards, fruit and garden plantations, and making orchards, vineyards and gardens prolific, in disseminating horticultural knowledge by means of lectures and otherwise, and in printing for free distribution the results of such investigations or experiments. The whole of this work is placed in charge of Cornell University.

THE RUSSIAN BALDWIN.—We have received from Dr. Hoskins, Newport, Vt., the samples of a fine winter apple, believed by him to be a Russian, but not yet introduced among American nurserymen. At this date, May 17th, one of these samples is still in good condition, and that under unfavorable storage. The size is above medium, the color yellowish ground almost covered with dark red, sometimes in stripes and splashes; quality very good, better than the Baldwin.

THE FIRST REPORT of the Ontario Fruit Experiment Stations has been bound in with ours, as well as that of the Entomological Society. A bound volume, containing these two reports, is now being mailed, by the authority of the Minister of Agriculture, to all paid-up members of our Association, a book which we believe will give much satisfaction. Our readers will be surprised to find how much progress has been made during the very first season of our operations.

MR. J. R. ANDERSON, of the Department of Agriculture, Victoria, British Columbia, has issued a bulletin in which he reports a meeting of the North-West Fruit Growers' Association. In the report of the Committee on Transportation we find the following resolution concerning fruit packages:—"*Third*, That estimated weights of standard size fruit packages shall be estimated as follows:—Apples, 50 pounds; pears, 40 pounds; peaches, plums, prunes and grapes, 18 pounds; cherries, 10 pounds; or such actual weight as may be hereafter determined."

WINTER APPLES appear to be a failure again, just when we wanted to try some special shipments to Great Britain. No Spys, no Baldwins, no Russetts; all our standard sorts barren again! Is it the same in all parts? There is just one variety of winter apple at Maplehurst which is bearing a heavy crop this year, and that is the Cranberry Pippin. This is just a superb variety for the south shore of Lake Ontario, for there it grows to perfection. It is like the Gravenstein among Fall sorts, an attractive apple for all purposes.

THE CHANGING of the bearing year of our apples and pears by gathering the young fruit has often been advocated, but it would appear that the theory is a mistaken one. It would seem that it is the bloom that exhausts the tree rather than the maturing of the fruit. That this is the case, instances in proof were very numerous during 1894. For example, in our King orchard a large

number of trees blossomed very heavily, but, owing to the scab and other unfavorable conditions, entirely dropped their fruit as soon as it was set. These trees do not show a single blossom this year, while two trees in the same orchard which did not bloom in 1894 are this year completely covered with it. The same is also true of other varieties throughout our orchards.

THE GOVERNOR-GENERAL, being himself interested in fruit growing at the far West, sends us an appreciative letter in response to a bound volume of the year 1894, which we forwarded him. His secretary, Mr. William Campbell, writes :

I am desired by His Excellency the Governor-General to convey to you his sincere thanks for the copy of THE CANADIAN HORTICULTURIST for 1894 which you have been so good as to send to him.

His Excellency desires me also to say that he appreciates the compliment of the portrait and courteous notice of himself which have been inserted in the volume.

His Excellency is glad to possess such a compendium of useful information.

THE FIRST ANNUAL REPORT of the Fruit Experiment Stations of Ontario has been published. It contains 64 pages of matter which will be of especial interest to fruit growers. For example, Mr. Dempsey, of the Bay of Quinte Experiment Station, describes in a very exact table about two dozen varieties of apples, and a dozen of pears ; he gives, also, outlines of many varieties, drawn from nature by himself. Every year additional varieties will be described and illustrated until this report becomes an invaluable encyclopædia of Canadian fruits of every variety. Full accounts are also to be included of the various experiments conducted at each station under the direction of the Executive.

SPRAY PUMPS are numerous in the market, and each claims to be the best. We have been using the Ideal, made at Brantford, so far this season, and it has given us great satisfaction. The company have made a number of improvements in the working parts at our suggestion, and have recently lengthened the handle and attached an agitator to keep the liquid stirred up. They have also, at our request, attached a half inch hose, which is much lighter to elevate on the end of the bamboo pole than the clumsy inch hose, which has been used hitherto. The pump works easily and has very little about it to get out of order. What is now wanted is that all the working parts possible should be made of brass, so that they would not be corroded by the sulphate of copper.

IT PAYS to use a fine nozzle, like the Vermorel, in spraying. With the old Boss nozzle we would run out four or five barrels in a morning ; with the Masson, a much better one, we ran out about two or three barrels ; with the McGowan, about one and a half ; but with the Vermorel we find we can spray

nearly a whole morning with a single barrel of Bordeaux mixture. Besides, we can do better work with a fine vapory spray, because this covers the foliage much more completely than a coarse spray. For large apple trees the McGowan nozzle is best, because it throws the spray farther.

Most people use too heavy hose also in spraying. A half or three quarter inch is quite large enough, and it should be twelve or fifteen feet in length, so that it can be elevated near the branches of the higher trees.

WINTER APPLES will be a light crop in 1895, if the indications in Southern Ontario prevail throughout the province. The failure of the Baldwin to set fruit appears to be chronic. Again this year Baldwins show no bloom, though the orchards are cultivated in the very best manner and the trees appear to be healthy and vigorous. Why is it that this apple, which was once the most productive of all, has of late years become the least satisfactory? The Cranberry Pippin in our orchard is loaded, as it also was two years ago when others failed. This variety appears to be one of the most satisfactory of winter apples, and may yet take the place among apples of its season that the Gravenstein does among fall varieties. It is much inferior to the Gravenstein as a dessert apple, but for cooking purposes it is excellent, and its fine appearance commands for it a ready sale.

THE EFFECT OF THE LATE FROSTS.

Up to the 12th of May the prospect for an excellent crop of fruit was never better in most parts of Ontario, with the exception, perhaps, of winter apples. The bloom was unusually early on account of the exceptionally warm weather, and as a result, the early and severe frost, like that on the night of May 12th, was most injurious. A few favored sections seem to have escaped without much injury, as, for instance, portions of the Niagara district, Prince Edward County, and some parts of Essex County, but, for the most part, the injury to the grape, cherry, peach and plum crop seem to have been universal, and in some parts apples and pears also are totally destroyed. It is possible that the result may be a largely increased value for the fruits which remain, but, owing to the low rates of transportation, fruits are now shipped in from California and other distant points, glutting our markets whether we have a crop in Ontario, or not.

The following reports from our directors will be interesting to our readers;

MR. T. H. RACE, of Mitchell, writes:—The repeated frosts since the night of the 12th of May have been the most damaging known in this section for thirty-five years. Throughout the County of Perth cherries and plums are totally destroyed, currants and gooseberries nearly so, and raspberries are cut so badly that scarcely a quarter of an average crop can be looked for. All the first blossoms on the strawberry vines have been destroyed, but there may yet be a fair crop. Pear trees blossomed very heavily, and they are still showing signs of vitality. In the southern parts of the county, about St. Marys and on toward London, this sign is even more promising than about here, Stratford and northward to Listowel. It is too soon yet to tell what the effect is going to be on the apple crop. The fruit stem of the Duchess and other early varieties seems quite firm yet—even into the faded blossoms, and the later blossoming varieties are expected to be fairly safe for an average crop.

MR. L. CHAPIN, of Brantford, writes:—We have had very severe freezing for several nights in succession, and it would seem impossible for any fruit to survive. Plums and grapes are entirely gone; strawberries and pears nearly all gone; very few apples, although blows look fairly healthy yet; a few currants still remain.

MR. A. M. SMITH, of St. Catharines, writes:—I do not think that along the lake shore here the fruit is very much injured, excepting early strawberries, which are nearly all destroyed. The continuous frosts we are having may yet blight the prospects. J. Broderick, in Louth, thinks he will have from one-third to one-half a crop of grapes, and Z. Bayley, of Niagara, thinks he will have a third of a crop on a fifteen acre vineyard of Niagaras. In the vicinity of the lake, most of the growers think peaches and late apples and pears are safe.

MR. W. M. ORR, of Fruitland, writes:—The frost has been the most severe that we have ever experienced in this section so late in the season. Tree, vine and bush fruits have suffered very little along the border of the mountain, and, if no further misfortune befalls the crop, we will have hundreds of tons of grapes and a good crop of plums, pears and small fruits. However, nearer the lake very serious damage has been done, many vineyards and plum and pear orchards, together with small fruits have been ruined for this year. I have heard very discouraging reports from North Wentworth and Halton.

MR. M. PETTIT, of Winona, writes:—From what I can learn, all fruits are very badly damaged in this division, with the exception of that small portion along the south shore of Lake Ontario lying between the mountain and lake, and in this some vineyards are badly injured; also pears, plums, peaches and cherries to some extent. There was never a better prospect for a full crop than we had before the frost.

MR. W. BOUTLER, of Picton, writes:—We had no frost on Monday the 13th of May, which appears to have been quite severe in Western Ontario; but on Wednesday and Thursday nights, the 15th and 16th, we had quite a severe frost, which we fear has hurt the strawberry crop some, but it is yet too early to tell the result on apples, pears and plums, which bid fair to be a good crop. The raspberries suffered considerably, through the continued cold winter, and the tops of canes are damaged seriously. Hastings and Prince Edward counties being adjacent to the Bay of Quinté and Lake Ontario, the fruit crop is not so early in blooming as in Ontario West, and consequently we still hope apples, pears and plums are not as seriously injured as was first supposed. (Later).—Up to yesterday (May 21st), reports received from Belleville, Napanee and here, show that the frost did very little damage; but we had a severe frost last night, which I fear did considerable damage—froze tomato plants through a covering of cotton. The grapes are cut down and it is cold again to-day, with prospects of another frost.

MR. GEORGE NICOL, of Cataraqui writes:—Judging from the appearance of the blossoms, we may expect an average crop of apples and pears. Small fruits, from present appearances, will be an extra crop.

MR. G. C. CASTON, of Craighurst, writes:—It is impossible to give an estimate of the damage to fruit by the late frosts. Until we see what falls from the trees, we can tell nothing about tree fruits. All new shoots of grapes are frozen off, and strawberries are badly damaged.

MR. THOMAS BEALL, of Lindsay, writes:—Judging by personal observations in my own and neighboring orchards, I am of the opinion that, notwithstanding the several frosty nights we have had during the two past weeks of cold and unseasonable weather, there is at present every reasonable prospect of our having at least a good average crop of apples and pears. It is too soon to be positive in this matter, as our orchards are yet in full bloom. A much better estimate may be made a week hence. The grape crop is very materially injured. The early blossoming varieties of strawberries are injured to some extent, but only a small percentage on the whole crop. Other small fruits—gooseberries, currants, raspberries, etc., are looking fairly well.

MR. R. B. WHYTE, of Ottawa, writes:—Apples promise a good crop. Damage from frost very light, confined to a few localities and to early blooming varieties, such as Peach, Tetofsky and Duchess. Native plums promise a good crop. Cherries, where grown, are a good deal hurt by frost. Grapes in many places are a total loss, and everywhere very much injured. English varieties of gooseberries have been badly winter-killed and will be a small crop; native varieties will be less than an average crop. Currants in some localities are injured by frost, but generally promise a full crop. Strawberries very much injured by frost in some localities and do not promise over two-thirds of a crop. Raspberries look well, no injury from frost.

In addition to these reports, MR. M. BURRILL, of St. Catharines, President of the Louth Fruit Growers' Association, writes:—On my own place, things at present look as follows:—Quinces all gone, plums 90% destroyed, pears 75% destroyed, peaches (early) 60% destroyed, peaches (late) 80% destroyed, cherries (sweet) 90% destroyed, cherries (sour) 20% destroyed, strawberries 40% destroyed, grapes 50% destroyed. On the lake shore the prospects are brighter; south of me, worse. I am a half mile from the lake.

MR. J. M. FISK, of Abbotsford, Que., writes:—We had a heavy frost on the 13th of May and a lighter one on the 16th—doing considerable damage, killing back our grape vines and discoloring the bloom on our fruit trees and causing many a grower to feel that the bottom had suddenly dropped out of his calculations. Although the weather stil continues cool, the pear and apple crop does not seem to be so seriously injured as at first supposed, and we can but hope that the reports from the different parts of the country will prove somewhat exaggerated and the fruit crop of 1895 will not be a total failure.

Question Drawer.

The Pearl Gooseberry.

740. SIR,—Please give me a short history of the Pearl gooseberry in your June number. Where did it originate, and what superior qualities has it?

F. C. BULMAN, *Toronto.*

This gooseberry is a seedling, raised at London, Ont., by Mr. William Saunders, now director of the Experimental Farms of the Dominion. It was a cross between the Downing and an English variety, called Ashton's Seedling It has all the vigor of the Downing, as resistant of mildew, and a trifle larger and more productive.

Chrysanthemums from Cuttings.

741. SIR,—Will you give a few hints on raising chrysanthemums from cuttings. Do they require pinching off?

SUBSCRIBER.

Chrysanthemums after blooming in the fall, should be cut down, and the pots containing the roots should be stored in the cellar, where they will require little or no watering. About the first of March they should be brought up to the light and watered, and in a short time there will be an abundance of healthy green sprouts from which cuttings may be taken. These sprouts may generally be taken up with a few roots attached, and if planted singly in small pots go on growing as if nothing had happened. If cuttings only are taken, they may be rooted in a pan of clear, sharp sand, which should be kept in a warm window and well watered. As soon as well rooted, the plants should be potted in rich soil in small pots, and should be re-potted into larger ones as soon as the soil becomes well filled with roots. They may require three or four shifts during the season, and by September should be in eight or nine-inch pots.

If it is desired to grow the plants in bush form, they should be pinched back when four or five inches high. Branches will then start at every leaf, and these again may be pinched back when they have grown six or eight inches. If a tree form is desired, one straight stem should be trained to a stake, and when a couple of feet high, the tops should be nipped off and a few branches allowed to start to form the head. These may be pinched back when they have grown a few inches, and all branches starting on the stem below these should be rubbed off. Large blooms may be obtained by leaving but few branches.

Trees for Live Posts.

742. SIR,—Please say whether black walnut would answer for fence posts for supporting wire fences. If so, where could I get the trees, and when would be the best time to plant the same? Is there any other tree that you would consider better for the purpose?

J. NEIL, *Centralia, Ont.*

The black walnut is a very durable tree, but grows to a considerable size and is very exhaustive upon the soil. We are inclined to think the Lombardy poplar a better tree for this purpose. It is a quick grower, and, being very upright, will afford very little shade.

Propagating Blackberry Plants.

743. SIR,—In dividing up blackberry roots in the spring for propagation, how short can you cut them to make healthy plants? Can black raspberries be done in the same way?

MRS. A. FRASER, *Weston.*

The roots should be cut in the fall, and kept stored in sand till spring, in order that the cut may callus over, but a certain proportion may grow if cut in spring. The roots may be cut in pieces from one to two inches in length. In planting they should be laid horizontally, about an inch deep in good soil. If started in a hotbed they will stool better and make excellent plants the first season.

Whale-Oil Soap Wash.

744. SIR,—In your last issue you give the advice of Prof. Howard as to the use of whale-oil soap. Please give directions for the use of that substance. I have used kerosene emulsion, diluted in nine parts of water, and have caused severe loss of young nursery stock.

J. E. HARDY, *Oka, Que.*

Probably the injury was the result of imperfect emulsifying, leaving some pure kerosene in the liquid. Kerosene itself is fatal to vegetable growth, but when properly emulsified so that it will mix with water, it is safe. The kerosene should not form more than 1-15th part of the whole mixture. Whale-oil soap wash is made with 1 pound whale-oil soap to five gallons of water.

Propagating Raspberries.

FIG. 779.

745. SIR,—How do you grow raspberries from tips?

D. N. ANDERSON, *Wyoming.*

Propagation of Black Cap raspberries is very easily done. The tip of each young shoot, if pegged down, as soon as it reaches the ground will take root. A simpler plan is, bend over the branches, as soon as long enough, say, in August, and throw on each a shovelful of earth, firming down with the foot. These will strike root, and, in the spring, may be lifted and planted for fruit bearing. (See Fig. 779.) If rapid propagation is wanted, a foot or so of the cane may be covered, and several buds will root, and each make a plant, though inferior to the terminal one.

Cabbage Maggot.

746. SIR,—My cabbages are infested with white maggots, which are eating the roots. Is there any remedy?

W. H. TAYLOR, *Hamilton.*

This maggot is the larva of a small fly which eats into the ground and roots of turnip and cabbage plants. The usual advice given to overcome this enemy is to set the plants each year in the new piece of ground, as far away as convenient from the plantation of the previous year. Professor Bailey advises inserting bisulphide of carbon into the soil when the plants are in the hotbed. Then puddle the plants, when transplanting, in a puddle to which sulphur has been added, and sprinkle sulphur about the plants after they are set.

Stock Mixtures.

(See question 733.)

It is important to observe two things in order to keep stock solution from deteriorating. First, to keep both the copper and the lime solution from the air; it is recommended to cover each securely and bury the casks in the ground. Second, to keep each solution separate; if mixed, they act chemically upon each other, so that the fungicidal power is injured, and in a short time, say, inside a month, wholly lost.

303 Crawford St., Toronto. D. W. BEADLE.

Open Letters.

A Curious Plant.

SIR,—I have a curious and interesting plant, popularly called Musquito plant (Lopezia rosea), which I think is worthy of being more generally grown. It flowers from December till May, constantly covered with its small rose-colored flowers borne on long slender branches, often a yard long on well grown plants. A plant suspended from the ceiling of a room, or rafter of greenhouse, has the appearance of a swarm of colored flies clustering about the plant, the flowers are borne on such slender branches and pedicles. Along with Cyperus Alternifolius, it makes a fine plant for table and mantle decoration.

E. W. BOWSLAUGH, *Kingsville, Ont.*

List of Secretaries.

SIR,—I suggest that you publish a permanent List of Secretaries of Horticultural Societies. This will enable Societies to interchange their Lists of Awards, commonly called Prize Lists. We hope to see members of Societies from all over Ontario at our Exhibition on September 10th. In fixing on this date we wish it distinctly understood that we do not wish to supersede the Toronto Industrial. If each Society would furnish its members with badges, it would be a great convenience. We propose to wear them on our excursion to Guelph on June 20th.

E. MORDEN, *Sec,, Niagara Falls Hort'l. Soc.*

Books for Subscribers.

THE HORTICULTURIST'S RULE BOOK. By Prof. L. H. Bailey, of Cornell University. A new revised and very much enlarged and improved edition of this valuable work, which is an encyclopædia of practical information for the fruit grower. Price, 75 cents.

Or to subscribers who do not take a premium plant, and pay in to the undersigned the full amount of their subscription for one year, for 40 cents.

Or to subscribers paying $2 for two years' subscription and not taking a plant, for 25 cents.

Address L. WOOLVERTON, Grimsby, Ont.

Bulletin 23, Central Experimental Farm, is devoted to (1) Spraying, (2) Injurious Insects, (3) Potato Blights, (4) Black Knot.

Brampton Horticultural Society.

SIR,—We are supplying each member of our Society with twelve gladiolus bulbs—two each of six varieties, and two ounces of sweet pea seed. We propose to hold an exhibition in the fall, at which honorary awards will be given.

A. MORTON, *Secretary.*

Niagara Falls Horticultural Society.

Secretary E. Morden writes that the Niagara Falls Horticultural Society has divided 2,700 gladiolus bulbs from three sources into 100 lots. They have about 90 members and expect to make up the 100 very soon.

Their List awards for their great Exhibition of September 10th is being printed, and will be sent to the secretaries of other societies whose addresses may be known. Doubtless other societies will arrange excursions to the Falls and take in the Exhibition. Admission 10 cents during the afternoon and 15 cents during the evening.

St. Lambert Horticultural Society.

SIR,—A new Horticultural Society has just been started at St. Lambert, near Montreal, which is a thriving suburban village, and with many zealous amateur gardeners. It is to be called the "St. Lambert Horticultural Society," and its object will be to encourage, not only the cultivation of flowers, but also of fruits and vegetables, and to increase the planting of trees. The Hon. L. O. Taillon, Premier of the Province, has been invited to become the Hon. President, as St. Lambert is in the County of Chambly, of which he is member. And it is expected that the Society will speedily develop into a county one. The other officers are :—President, Rev. W. J. Dart, M.A., Rector ; Vice-President, Mr. A. Cameron ; Secretary-Treasurer, Mr. H. Bragg. Committee :—Mrs. Dawson, Mrs. G. Brown, Mrs. Grant, and Messrs. P. M. Wickham, P. Locke, J. Brown, and J. F. Raphael. An exhibition will be held in the fall, for which arrangements are now being made.

MR. H. BRAGG, Room 405½ Board of Trade, Montreal, *Secretary.*

Mulberries.

SIR, — Having read with much interest the latest report of the Fruit Growers' Association, I would like to know why mulberries have not been considered sufficiently important for discussion. Men who are travelling through the country selling trees have been booming mulberries. What is wrong with them that the leading fruit men will not even mention them? They certainly have their faults, yet they are delightful in many respects.

M. C. BROWN, *Dunboyne, Ont.*

Question Budget.

Replies to these questions are solicited from our readers.

SIR,—Could you, or some of the readers of the HORTICULTURIST, who have grown the Stark apple, give their experience as to the hardiness of the tree, bearing and keeping qualities, etc. ?

A. C. PARKS, *Hay Bay, Ont.*

Our Book Table.

Sketches of Wonderland. Tourist book of Northern Pacific R. R. The wonderful attractions of Yellowstone Park, the Great National Park of the United States, are well described..... Wholesale price list of Florists' stock. Wm. Bacon, Orillia, Ont.

TWENTY-FIFTH ANNUAL REPORT of the Entomological Society of Ontario. 1894.

FOURTH BIENNIAL REPORT of the State Board of Horticulture of the State of California, 1893-'94.

MARECHAL NIEL.

THE

Canadian Horticulturist

VOL. XVIII. 1895. No. 7.

MARECHAL NIEL ROSE.

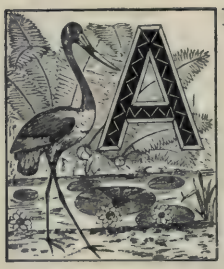
OF all the yellow roses, the Marechal Niel, which is shown in our frontispiece, is the most beautiful. Globular in form, very large and very full, it is blessed with numerous charms, of which not the least is its rich fragrance. This latter charm it owes no doubt to its musk blood, crossed with the fragrant Teas.

The Noisette class to which it belongs is otherwise known as Rosa Moschata hybrida, or Hybrid Musk rose, because grown from seed of the White Musk fertilized by the Blush China, a Bengal rose, by a florist in South Carolina. Philippe Noisette, another florist, raised a seedling of this class and sent it to his brother in France, and called the class after his own name. There, later on, in the year 1864, the Marechal Niel was produced by Paradel, and thus it was given a French name.

We cannot recommend this beautiful climbing rose to amateurs because it is delicate, and can only be grown under glass, and that with careful treatment. The inexperienced will do better with Solfaterre ; or, if a climber is not needed, with Perle des Jardins, which is easily grown and a free bloomer.

The Eldorado blackberry, according to the Ohio Experiment Station, has withstood 12° below zero, is equally productive as the Snyder or Ancient Briton, and the berries superior to those varieties. The quality is good.

GOOSEBERRIES FOR PROFIT.



ANY of your readers at all acquainted with our local fruit markets will not deny that the supply of gooseberries is by no means equal to the demand; and that for those who can command a suitable soil and location, a sure and liberal profit can be realized, at a very moderate outlay of money, time and labor, by their cultivation.

The soil best suited to gooseberry growing has been found to be thoroughly drained, rich, and deeply worked clay loam. These qualities of soil are imperative, as the plant is very impatient, either of excessive dryness or heat. This is the only cause why success with it is at all uncertain. Therefore, with a moderate protection from dryness and heat, the success of gooseberry culture may be looked upon as assured.

To secure these conditions, location must be skillfully used. The plants should be two years old, strong and well rooted, and, if carefully planted, their after growth will be rapid. The ground should be well prepared and marked off in lines four feet apart each way. Thus planting at the intersection of each line makes 2,275 plants to the acre, and will give satisfaction to the workers and pickers, and form a fine plantation after the first year's growth. The ground must be stirred by means of a one horse cultivator, between the rows both ways, and not a weed allowed to be seen. Thus treated, the young bushes make extraordinary growth of wood and the set of fruit buds will be astonishing, repaying all the care bestowed on them. Of course in gooseberry growing, as in every other kind of fruit culture, if one would wish to reap the highest results, increasing vigilance and constant application must be certainly and freely given.

The annual pruning consists of shortening the summer's growth to a moderate extent, and thinning out the crowded shoots. This operation is best done (though very often neglected) in the early summer, as the growth of wood and fruit buds, on that which is left, will be so much better and more encouraging to the grower. After the wood has borne fruit for three or four years, and becomes somewhat old and feeble, cut it entirely out, and encourage young growth in its place. This renewing is very important to all pruning for fruitfulness. I have known a gooseberry plantation to remain profitable for twenty years and over, by proper attention to pruning and cultivation, but at the same time I am no advocate for this kind of thing; as I believe the best results come from young and vigorous plants, as in other fruits, and would advise changing the plantation after ten years' service, as young plants are produced so cheaply that there is no economy in running a plantation after its prime is passed.

The ordinary enemies of the gooseberry are insects, mildews and blights.

The most common insects are the caterpillar of the gooseberry saw-fly (*Nematus vetoricosus*) and what is commonly known as the gooseberry worm (*Tempelia grossularia*). The first of these insects is hatched early in May, and so numerous do they become that they will completely defoliate an entire plantation, unless given an application of white hellebore, which will effectually stop their ravages and save the crop. This insect is not nearly so abundant or destructive as formerly. The gooseberry worm mentioned was also a threatening scourge, but its numbers are less and it may disappear from our gooseberry bushes. This insect settles on the gooseberry and devours its contents, then immediately joins itself to another berry, enters and devours it also, and so continues. No remedy is known for this insect aside from hand picking.

Occasionally plantations are attacked with a form of mildew, destroying the fruit and rendering the bushes worthless. In my opinion, the cause of these diseases is atmospheric, and the remedy is, to forbear planting varieties that are subject to such parasitic growths. Happily several varieties have been introduced within the past few years that are seldom, if ever, attacked by this mildew.

In conclusion, I may state that our standard varieties of gooseberries are limited to three or four, as a variety must be at once hardy to stand our climate, free from mildew, a good grower, and an abundant bearer, with fruit of first-class quality; these points are fully developed in Industry, Smith's Improved, Downing and Houghton's Seedling.—Ohio Farmer.

Shelling or Rattling—Disease of Grapes.—The dropping of grapes from the bunches before they are ripe is becoming a serious trouble. The apparently possible causes for this shelling of the grapes include injuries caused by parasites, as insects, fungi and leaf blight; or such an improper condition of the vine as is shown by the shriveling of the stems before the grapes are ripe, by premature ripening of the fruit and the wood, by overbearing and overgrowth of wood and leaves; or by such soil conditions as too rich land, wrong kind of soil, too much cultivation, excessive drouth, especially when followed by excessive rains, a weak root system, lack of phosphoric acid and potash and other elements, and the need of barnyard manure; or by such atmospheric conditions as excessive heat or unfavorable winds. The disease has been studied by E. G. Lodeman, of Cornell University, who finds that neither insects nor fungi are the cause of the trouble, but that potash seems to be the food required by the grapevine in the majority of cases where the berries shell, and that this element may be needed in all cases. The continuous cropping to which most of the shelling land was submitted before the vineyards were planted is considered the principal reason for the lack of potash. Many of the possible causes mentioned will aggravate the trouble.—American Agriculturist.

PRUNING GOOSEBERRIES AND CURRANTS.

Gooseberries.

CONFINE pruning chiefly to thinning out main branches and cutting out weak and exhausted parts, regulating the current year's young wood as evenly as possible over the trees at such distances apart that the hand may be passed down among them without being scratched. Allow no shoots to remain to grow inwards or in reversed positions whereby they tend to crowd the centres, which ought to remain moderately open. Keep the shoots clear of the ground by cutting away the lowest growths. The pendulous-growing varieties require special attention in this respect, and when pruned ought to be cut to upward pointing buds. Prune erect growers to outward buds, and those of spreading growth to inside buds, which will modify to some extent their natural habit, producing more shapely and serviceable bushes. In thinning out, either cut the shoots dispensed with entirely out close to the old wood, or leave them to the extent of an inch, when they will form spurs at the base. A dusting of lime when the bushes are damp is good for the trees, destructive of insects, and a preventive of birds taking the buds. If manure is needed draw the earth from below the branches till the roots are visible, then spread a layer of decayed manure on them, covering with a sprinkling of fresh soil. The remainder of the soil outside the radius of the roots may be manured and forked over, or the latter alone will do where the ground is rich and the trees productive.

Red and White Currants.—As the disposal of a proper number of branches —usually five to seven in ordinary sized bushes—is effected early in the existence of the bushes the pruning is a very simple matter. It consists in pruning back to within an inch of the main stems all the side growths produced during the summer, shortening the extension growths in the same way with full-sized bushes, but in those required to extend, leave a length of not more than nine inches. With weakly trees six inches is enough. The object of shortening the branches to these distances is to cause proper breaks or side shoots, and to strengthen the stems so that they can bear the large crops of fruit which are annually produced from the clusters of basal buds congregated on the spurs. Give the trees a good dressing of manure over the roots, and sprinkle the branches with fine lime, which serves to cleanse them of moss, and otherwise benefits them, as well as preserving the buds from birds, which, however, are not so destructive with currants as gooseberries.

Black Currants.—These bear differently, and, in pruning, abundance of young wood must be left, confining the pruning to thinning out the oldest branches, and a large proportion of the latest bearing shoots. Strong sucker-like growths from the base may be freely encouraged, or vigorous growths from

any part, but preferably originating in the lower parts of the bushes, can be utilized, avoiding crowding. All the wood removed should be cut out cleanly, none being left to form spurs, as in red and white currants, though short stubby spurs which form naturally and have received light and air freely, must be retained. Shortening the leading shoots need only be adopted to regulate the size and symmetry of the bushes, but this is best effected by cutting out the longest branches from time to time.—Tonic.

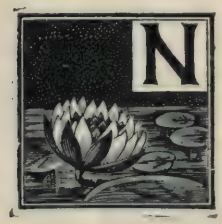
NOTES ON THE LATE FROSTS.

HEN you ask me to write you a few notes on roses and their behavior this season, it is clear to me that you have no proper conception of what we have passed through in this up-country since the winter left us. I might say that roses with us have had no chance to behave this season. They are like the youngster at school who said every time he tried to do his best, he got his head snubbed off. On the tenth of May my roses were trying to do their best, and I never had such a promise for a magnificent blooming season. One week after there was not a leaf of living foliage on them, and so great was the shock to them from the repeated frosts that many of my finest plants have not recovered, and never will. Out of over a dozen strong Gen. Jacque bushes I have but four sending out new shoots. Many other sorts still more tender are totally dead.

This may appear strange to you, but, when you remember that the County of Perth occupies a very high altitude midway between the great lakes, and that just here we are in a dip or slight depression on that high level, the first stretches of the Thames valley, you can understand how every cold wave settles down upon us with all its chilling distructiveness. On account of these topographical conditions which I have referred to, we are, I believe, more subject to those low treacherous temperatures than any other section of Western Ontario. I have not in any other section noticed the raspberry bushes so completely destroyed as they are just about here. The Marlboro shot out again from the canes, but the Golden Queen and Cuthbert canes are as dead as the wood of last year. On fourteen plum trees and a like number of pear trees that I had heavily loaded with blossom, I will not have fourteen specimens of fruit, and I notice some branches of my Pond's Seedling plum trees have died away since the foliage was destroyed. Among the gooseberries the Crown Bob seems to have survived the best. The Whitesmith, Pearl, Industry, Ocean Wave, and even the Conn, were quite destroyed. Of currants I had a promise of forty or fifty pailsful before the frost, now I do not look for one. In short, I may write of fruit and roses with me this year as the traditional Irish litterateur did when asked to write a treatise on the snakes of Ireland. He summed up the whole subject with the sentence, "there are no snakes in Ireland." Such, I am sorry to say is the case with me, there is no fruit and no roses on my premises this year.

Mitchell. T. H. RACE.

THE CULTURE OF BLACK CURRANTS.



OTHING is easier of culture than the black currant, as it grows and bears well in any tolerable garden soil. To propagate them it is only necessary to plant in autumn or early spring, cuttings a foot long, in the open field or garden, and cultivate them; they will root readily. The black currant should never be allowed to produce suckers, and in order to prevent this, the superfluous buds should be knocked off when the plants are transplanted. This will keep them always in the shape of trees, with single stems and heads branching out at from 12 to 20 inches from the ground.

Thin out the useless wood every winter, and if extra large fruit is desired, pinch off all the ends of the strong-growing shoots about the middle of June, when the fruit is about half grown, thus keeping the plant from spending all its energy in producing too much wood. I prefer, for large plantations, Black Naples, Champion, and Collins' Prolific. I prefer to plant in check rows, 5½ feet each way. Perhaps there is no place in the world where better black currants are grown than Great Britain and Holland. They are called currant trees, often having clean stems on them three and four feet high. Keeping a clean stem from 12 to 20 inches, enables one not only to till them easier, but to use a picker, which I will endeavor to describe: It is in the shape of an inverted umbrella cover—see Fig. 780. Put a canvas cover on the inside of the ribs of a large bamboo-ribbed umbrella; take out the braces and handle. To keep its shape opened out, two steel No. 9 wires are fastened on the inside by being wired to each rib, one near the outside, and the other near the bottom. These give enough spring to clasp it around a stem, as it has to be opened only about one inch to let the stem through the slot on the side to the centre of the picker. The whole is mounted on three portable legs made of umbrella braces. Near

FIG. 780—A PICKER FOR BLACK CURRANTS.

the trunk where the stem socket is, a piece of cloth is sewed to make a pliable and close fit round the stem when the picker is clasped together.

When the currants are ripe, adjust the picker as high as possible on the stem under the top. Around the lower part of the stem, immediately under the picker, clasp or wind a piece of thick felt; hold it with the left hand, and in the right use a wooden mallet with felt tacked on each end. Gently tap the stem all around, and watch the currants fall. If ripe, scarcely one will be found on the bush. Unclasp the picker, let down the legs and empty the contents into a bag or basket. That's picking currants by an improved method, and one that will do away with all hand-picking. If people will let them get ripe, they sell better, are larger, and bring the same price as earlier, as black currants seldom vary in price.

As the fruit comes from the picker, a large amount of dead leaves, stems, etc., will drop also, which necessitates hand-cleaning to make it salable. This is all easily overcome if one has an old fanning mill. Take out all the sieves but the screen; one inch above it tack a canvas, or, better, make a canvas screen. If the currants are large, use the bean sieve; put this as near the hopper bottom as possible. Under the mill where the cleaned fruit comes out, spread a sheet or canvas to catch currants, and pick them up for basketing. Fill the hopper the same as with grain, turn gently, and watch results. This is another labor-saving job accomplished. Why pay pickers 20 cents a basket for picking and cleaning a 10-quart basket, when you can save that much, do ten times as much as one man, and grade your currants, too, if you choose?—R. N. Yorker.

Pruning Fruit Trees.—In pruning fruit trees, attention has to be given to the manner in which the particular kind bears its fruit. The cherry and the pear both bear their fruit on short spurs, and in trimming, therefore, the effort should be to produce a large quantity of healthy fruit spurs. Summer pruning does this admirably. The branches that we want to remain as leading shoots should not be touched; but the weaker ones may be pinched back, about mid-summer, one foot or two-thirds of their growth. This will induce the swelling of a number of buds that will produce flowers instead of branches, and in this way fruit spurs can be obtained on comparatively young trees; but with such kinds as the grape vine, the fruit is borne on the branches of last year's growth, so that the effort should be to throw all the vigor possible into those growing branches that we want to bear fruit the next season. To do this, we pinch back the shoots that we do not want to extend; or even pull the weak shoots out altogether. A little pruning is then necessary, in the winter, to shorten back these strong, bearing canes, or to prune out altogether the weaker ones that we check by pinching back during the growing season.—Meehans' Monthly.

NOTES ON VARIETIES OF STRAWBERRIES.

YOU will find enclosed some short notes on a few varieties with outline of berry taken from actual specimens. I have a number of others, but cannot lay my hand on them. In making those outlines typical berries were used, not monstrosities but berries that would give a good idea of the general shape of the variety. I might have got larger specimens of all the varieties, but they would not have been types of the variety. I have made preparations to make outlines of all the best varieties the coming season, will then furnish you with others.

I.—Haverland (P). A variety originating in Ohio. This is one to grow enthusiastic over. It is one of the best, if not the best of all; when one sees the ground covered entirely with fruit, from the first of the season to the very end of it. The originator may well be proud of it. It is magnificent in its foliage; most numerous in number of runners, enormous in quantity of fruit. The fruit is large to very large. Its only fault is, it is somewhat soft; of fair quality. It is certainly a berry for the home grower, and near market. Perhaps not suited for long distance shipment. Color rather light. As a producer of fine large berries nothing else with us equals it. It gives large fruit to the end of the season, and is one of the first ripe.

FIG. 781.—HAVERLAND.

II.—Bubach (P). Originating in Illinois. Here is another grand standby. The foliage is all any one could wish for, both in thrift and color and health; not a trace of rust; it makes runners fast

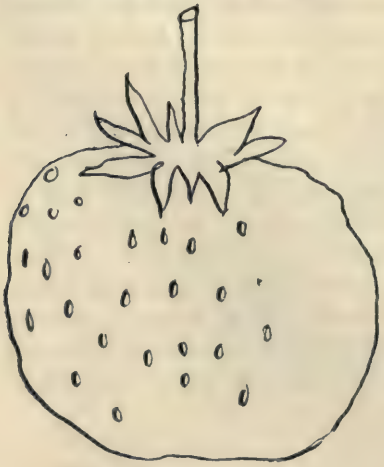


FIG. 782.—BUBACH 5.

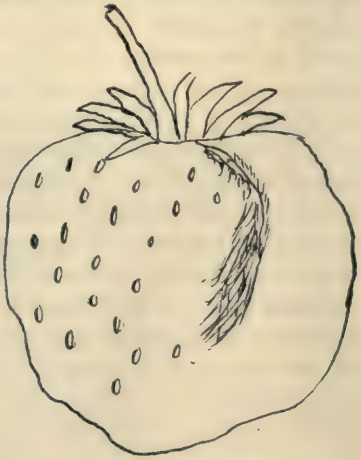


FIG. 783.—BUBACH 5.

enough for a grand row to fruit. The fruit is remarkable for its size and fine color. We place it among the productive ones. Fruit enormously large and very showy; good quality; sweet. It is perhaps the very best for the home grower, and near market, always selling and bringing good prices when the market is glutted with Crescent and other trash.

III. — Warfield No. 2 (P). Originating in Illinois. This is a wonderfully strong grower and great producer of plants, it resembles the Michel's Early in this respect, making almost too many runners. It is very productive, we place it along with the Haverland in productiveness. Fruit medium to large in size, is one of the firmest in the berry—equal to the old Wilson in this respect. Quality good and of a fine rich dark color. The berries are all perfect in shape, regular, no ill-shaped ones. It is one of the best, if not *the* best for long shipment —carrying in good condition the longest distances to market.

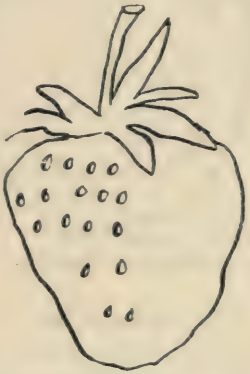


FIG. 784.—WARFIELD.

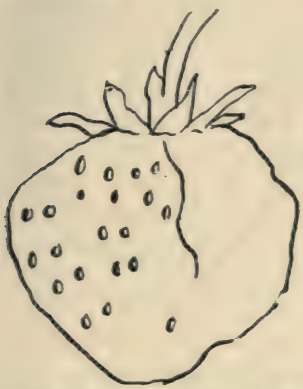


FIG. 785.—ANNA FORREST.

IV. — Anna Forrest. Foliage large and healthy. The fruit is large, somewhat irregular; sweet and pleasant. It is a free runner; only moderately productive. The fruit colors up something like Sharpless. Altogether, with us, it is not a promising variety; we have decided to discard it. So many better ones.

V.—Dayton (S). Originating in Ohio. This is a strong healthy grower, making many runners; plant very healthy. The fruit is large, light in color, not very firm, and only moderately productive. We have planted it two seasons, in doubt about it, but have about decided to discard it; there are so many better that we have *no* doubt about.

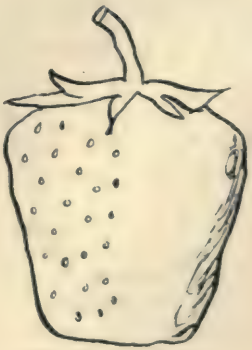


FIG. 786.—DAYTON.

FIG. 787.—PRINCESS.

VI. — Princess (P). Originating in Minnesota. This is a good strong grower; plant very healthy and making plenty of runners. The fruit is large in size, good shape, fine to look at, rather soft, not very productive. We are giving it a further trial. There are some parts where it seems to produce large crops of the finest berries

VII.—Greenville (P). Originating in Ohio. Here we have another grand berry, about which there is no doubt at all in anyone's mind, but all pronounce it at once one of the first class. We place it up alongside Bubach, if not in front. It very much resembles Bubach in color of plant, but it is a freer grower, making many more plants; it is more productive. The fruit is not quite so large; about the same in firmness. It certainly is one of the best for the home grower, or near market. No one can go wrong in planting largely of the Greenville.

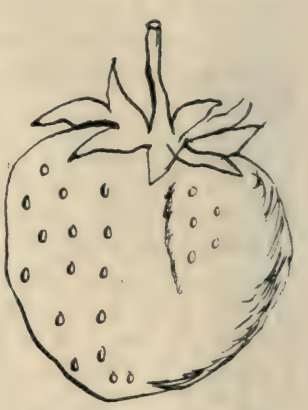


FIG. 788.—GREENVILLE.

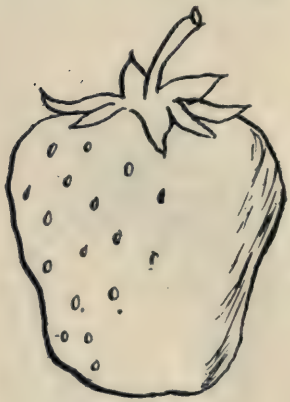


FIG. 789.—MARSHALL.

VIII.—Marshall (S). Originating in Massachusetts. The plant of the Marshall is very large, stools somewhat before sending out runners; rusts somewhat, plant though is vigorous. The fruit is large, dark-red, good shape and fine quality, productive. One of the best to grow for show berries. Have fruited it only one season. Will be better able to decide its merits after further trial.

IX.—Maple Rank (P). Originating in Ontario. A strong healthy grower, good runner, making wide matted row. The fruit is large, rich dark crimson and very firm. The shape is good, it is one of the finest, and thus should be a good shipper. If it grows to be as good in other places as with us, it will take a first place. It is being tested at several places North, South, East and West, before being offered to the public.

E. B. STEVENSON.

Experimenter in Strawberries,
Lowville, Ont.

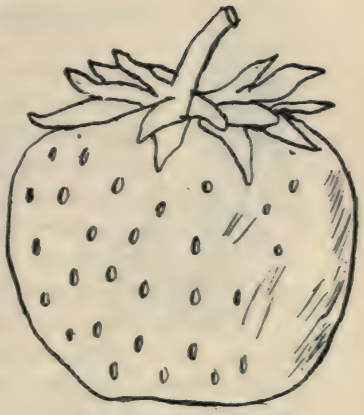


FIG. 790.—MAPLE BANK.

FRUIT ROT.

THE rotting of the ripening fruit of cherries, plums, peaches and other fruits, frequently causes serious loss to the fruit grower. A fungus of the genus *Monilia* attacks the fruit and causes it to rot. The rotted fruit afterwards becomes covered with a gray powdery mould and frequently hangs to the tree till the next summer, in a dried or mummied form. The gray powder consists of the germs of the disease, which may be washed by rains, blown by winds, or carried by insects to other parts of the tree, thus spreading the disease. The mummy fruits carry the disease over from one season to the next, and therefore the collecting and burning of these fruits appears to be a good sanitary measure. The fungus begins its attacks early in the spring, often destroying many of the blossoms. These decaying blossoms are blown about by the wind, thus spreading the infection. It also attacks the leaves and young twigs, but it is on the fruit that it commonly does the most damage. It attacks the fruit at any stage of its development, but spreads most rapidly when the cherries are nearly ready to pick. With warm, moist weather at this time, the disease spreads very rapidly, often nearly destroying a crop in a few days. Many of the cherries rot and fall to the ground while others dry, and hang to the branches over winter, as stated above.

Remedy.—As in the case of the leaf blight described below, we are only prepared to offer suggestions as to the orchard treatment against the fruit rot, as follows:—

1. Just before the blossoms open apply Bordeaux mixture.

2. Just after the blossoms fall apply Bordeaux mixture as before, with the addition of one ounce of Paris green for eighteen gallons of the mixture. The Paris green is used against the curculio which causes wormy cherries.

3. Make a third application from ten to fourteen days after the second using Bordeaux mixture and Paris green as before.—New York Exp. Station.

STRAWBERRIES AT MAPLEHURST.

THE first fruit of the season, how eagerly sought after, and how much enjoyed by all. Many think only of it as a luxury, after all, and on that ground refuse to furnish their tables with fruit more than for an occasional feast. This is all a mistake, for the strawberry is a nutritious article of diet. About ten per cent. of its substance is dry matter; one-half of which is nitrogenous, or flesh-producing. True, about ninety per cent of the strawberry is water, but eighty-five per cent. of milk is water, and who denies that milk is nourishing food?

Unfortunately, this season is not favorable for a good crop of this most delicious fruit. The extreme drouth throughout Southern Ontario has almost ruined the crop, and even the advanced prices do not pay the grower. A grower near Grimsby Park has been irrigating his patch, elevating the water with windmill power. His crop, as a result, is almost phenomenal.

Two varieties among the late comers we have tested for two seasons, and are quite prepared to discard, viz., Michel and Bubach 24. These varieties are both very early, ripening about the 1st of June, but both are too unproductive to be profitable. The foliage, also, is very weak, and the whole plant is very sensitive to drouth. These varieties much resemble each other, and are good dessert varieties, but not worth planting in the commercial plantation.

FIG. 791.
SAUNDERS IN '95.

Mr. T. T. Lyon, of the South Haven (Mich.) fruit-testing station, agrees with us in this estimate of those varieties. Under date 12th June, he writes: "The drouth and extreme heat are sadly pinching our strawberries. Michel is now almost past season with us (it ripens the crop almost at once), but yours are, no doubt, genuine. It is not profitable here. Bubach 24 is not quite productive enough here. The fine specimens of this are also gone with us. I doubt if it is at all disseminated. The same of Bubach 132 and 137. I have dropped all except 5 in my recent planting."

Saunders is a fine variety, of large size, and quite productive. It is about the same season as Williams, beginning to ripen the 10th of June this year; quite as productive, as vigorous, about equal in size, and a better berry. It has also something of that agreeably brisk flavor, so characteristic of the old Wilson. This season, however, it is much inferior to last year, owing to the drouth.

Laxton's Noble was so highly commended in the Garden (London) that we expected great things of it; but, like other foreigners, it is ill adapted to Canadian soil and dry seasons. The foliage is somewhat subject to rust; the berries, instead of being immense in size as they are in England, are quite ordinary in size, and the

FIG. 792.
LAXTON'S NOBLE IN '95.

plants are not very productive, at least, that is our experience for 1895. The quality is very good, the flavor mild and agreeable, for dessert purposes. The season is late, the first ripe berries coming on June 15th.

The Woolverton strawberry has done well at Maplehurst this year. The vine appears to root deeply, and, therefore, is less susceptible to drouth than most varieties. Standing at one side of the patch, it is very easy to distinguish the rows of this variety by the dark green color of the foliage, and vigor of growth. The fruit is also large, the finest samples taking a somewhat flattened shape, as shown in Fig. 793, and the others more evenly conical. They color dark red, and the flesh is fairly firm and agreeable in flavor, with very little acid. They seem to yield well, also, as is shown by the accompanying photogravure (Fig. 794).

This berry is a seedling grown by Mr. John Little, of Granton, and named after the editor, for which reason we hope it may prove a success.

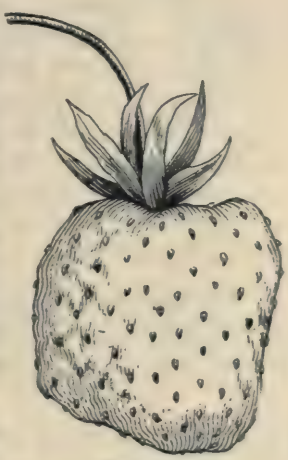


FIG. 793.
WOOLVERTON IN '95.

The Enhance, too, disappoints us this season at Maplehurst. The vines are laden with fruit, but apparently so sensitive to drouth that they will be very small in size. We will not report definitely concerning them until next season.

FIG. 794.—A BUNCH OF WOOLVERTON STRAWBERRIES.

FIG. 795.—CAUGHILL.

Caughell's Seedling. This berry was sent us from Mr. G. H. Caughell, Aylmer, the originator. The vine is fairly healthy, fairly vigorous, and fairly productive. The berry is above medium size, conical, necked, with moderately firm flesh, of good quality. Ripened its first berry July 11th. Needs further trial.

The Spraying Outfit at Maplehurst is fairly well shown in the accompanying engraving, drawn from a photograph. Sometimes two horses and three even are used, but for ordinary use the one-horse outfit is the most economical.

FIG. 796.—THE SPRAYING OUTFIT AT MAPLEHURST.

MIDSUMMER AMONG THE SMALL FRUITS.

TO a large extent the success of future years with the raspberry, strawberry, and similar fruits, will depend upon the care they receive during the summer. At this time they are making new growths, and if proper care is given them, they will make strong plants that will be able to form large and plump fruit buds for the next year's crop. It often happens that a severe drouth during the summer checks the growth of the plants, and, if a warm wet autumn follows, which causes the plant to make a second growth, they will most likely be injured by the winter. The judicious cultivator attempts to give such care as will tend to prevent this late and tender growth.

Raspberries.—After the raspberry crop has been gathered, it is well to cut out the old canes and thin out the new ones, thus throwing all the vigor of the plants into those that remain. The number of canes the plant should carry will depend a good deal upon the variety, and the condition of the soil, but about five strong canes will generally be found preferable to more. If the plants are grown in matted rows, they should be evenly distributed, and rather more can be left than when they are kept in hills. Formerly it was the custom to head back the plants during the summer, but, as generally performed, it was an injury rather than a benefit, as the canes were allowed to reach their full height and were then cut back. In this way much of the strength of the plant was wasted, and the remaining buds, if they started at all during the season, sent out weak shoots that were often injured by the winter. As a rule a cane allowed to grow naturally forms large buds near the top, and from these the best fruit will be obtained. If they are to be cut back at all it should be done early in the season, when the young canes have reached a height of about two feet, and then the terminal bud only should be pinched off. As a rule, however, it will not be best for the commercial planter to head back red raspberries at all at that time, although with some sorts it may be desirable. In the case of the Cap varieties it will be best to head the new canes back as recommended above, but if they have been neglected until they have reached a considerable height, so that cutting them back would sacrifice a considerable amount of wood, it will be best to allow them to branch naturally. During the month of August the plants should be watched, and if any of the canes are badly diseased with rust, it will be well to cut them out and burn them. To hold this disease in check the plantation should have been sprayed during the early part of the season with Bordeaux mixture. One spraying before growth starts, if supplemented with

one or two others after the young shoots appear, will, to a large extent, prevent the spread of the disease. In order to secure a proper growth of the plants, regular cultivation should be kept up during the season up to the middle of August. After each rain the soil should be stirred, and in this way the moisture will be conserved, and the proper ripening of the fruit and a strong new growth will be secured to carry the plant through the winter.

Strawberries.—If a strawberry bed is to be kept for one or more years, it should be worked over as soon as possible after the crop is gathered, in order that the new plants may find a soil in suitable condition for starting into growth. If the field contains much grass and tall weeds, it is often a good thing to cut them with a mower, and if there is so heavy a mulch that it will hinder working the land, it can often be burned off. The fire will also destroy many insects, and, as the old strawberry leaves will also be burned, most of the spores of the leaf blight will be destroyed, and the injury the following year lessened. The bed may be broken up in various ways, among the best being to turn furrows away from either side of the row, leaving only a narrow strip with plants upon it. The furrows can then be worked down with a culitvator, and the rows of plants thinned out and freed from weeds with a hoe. In this way the ground will be broken up and prepared for the new plants that will be formed. Especially if the summer is a dry one, the cultivator should be kept going throughout the month of August, so that a crust can form. The new plantation also should receive similar care, so far as the cultivation and the hoeing are concerned. One of the principal reasons for the running out of varieties is that they become subject to and weakened by the so-called rust or leaf blight. In the case of some varieties, much of the foliage is entirely destroyed, and the spots are so numerous upon the flower stems that they are girdled, and as a result they shrivel and the fruit dries up. From this cause half the crop is often lost. It has been found that this disease can be kept in check, if the plants are properly sprayed with Bordeaux mixture. This should be put on in July or early in August, in order that the plants may make a healthy growth during the fall. This should be repeated in the spring before the growth starts, and again as soon as the blossoms are off. By the last application the flower stalks will be covered with fungicide, and the chance of the drying up of the berries will be greatly reduced.

Currants and Gooseberries.—In addition to the thorough cultivation and hoeing which should be given to currants and gooseberries, in common with all other small fruits, they will also require one or more applications of fungicides in order that they may retain their foliage, and make a proper growth. The various spot diseases to which the currant is subject, and the mildew, of the European gooseberries in particular, by which these fruits are so frequently defoliated, can all be controlled, but to be entirely effective the remedies should be applied somewhat earlier in the season. From the above it will be seen that

the care required by the small fruits during the summer months is about the same for all, consisting of regular cultivation and hoeing, and at least one application of some approved fungicide after the crop is gathered. While almost any of the copper compounds used for this purpose would answer, Bordeaux mixture is generally preferred, as it is cheaper, and is not only more effective, but it sticks more firmly to the plants, and in consequence the results are much more lasting.—PROF. TAFT, in American Agriculturist.

THE LOMBARD PLUM.

I SUPPOSE it is unnecessary to extol the virtues of this well-known variety, but I so often see others planting orchards with other varieties that it must be many do not yet understand what they want. An orchard of good Lombard trees will yield results satisfactory to any one. I do not mean to advise that no other varieties should be planted. This is a mistake in any fruit orchard. But the Lombard should be in the majority. It stands, in my estimation, at the high-water mark. Three varieties of plum trees should at least be planted in every plum orchard, and for general market use none better can be found than the Lombard, Niagara and Damson.

The Bradshaw is a plum of a very fine quality, and has the advantage of producing a crop early in the season, but these qualities are offset by its shyness in bearing. Its crops are not large or very regular. If it could be made prolific it would be an excellent variety. Almost the same can be said about the Yellow Egg and the Washington. They are excellent plums, very large and delicious, but they are not profitable for market use. A few trees for home consumption would be appreciated on any farm. The Purple Egg is also a fine large plum, but the tree rots so badly that it nearly discourages one in raising it. If the trees could be hardened in some way so that the rot would not attack them, this variety would be exceedingly desirable. Genii is a large purple plum that has this same fault of being attacked by disease. The black-knot is sure to kill the trees early in life. The Green Gage and Imperial Gage are splendid plums for canning and should be raised largely for this purpose.

The Shropshire Damson is a splendid market plum. It is a small purple plum, and rather coarse to suit the writer's taste, but it sells well and is a very prolific bearer. A garden of these trees will pay any one. The Lombards are the most desirable market plums going, and with a little proper care the trees can be kept free from disease. Both of these varieties are good bearers, the trees are moderately hardy, and comparatively free from all diseases. As the black-knot is the great trouble with most growers of plums, the trees that are very susceptible to this disease should not be selected. There are others that are quite proof against it and most other parasites.—Germantown Telegraph.

SOUR CHERRIES.

Canned Cherries.

THE perfection of canned cherries can only be obtained by allowing the pits to remain in, and by cooking them in the jars. Many people, however, object to serving them with the pits in, and to obviate this, and yet obtain the flavor, tie 20 or more pits in a small piece of thin muslin or lace, and place them in the centre of each jar of fruit before it is cooked. Allow 8 ozs. of granulated sugar to each pound of cherries. Dissolve the sugar in hot water and turn it over the fruit (which has been placed in the jar as fast as pitted) until it reaches the neck of the jar. Put on the cover but not the rubber, place the jars in a vessel of warm water, with two or three nails under each jar to prevent its coming in direct contact with the bottom of the vessel; cover closely, and after it comes to the boiling point cook ten minutes. Remove from the kettle; stand the jars on a folded wet towel, take off the cover and fill full of hot syrup or water; wipe off the outside of the top; adjust the rubber and cover and screw down as tight as possible. Invert the jars, and if a drop of syrup oozes out it must be re-heated, and either the rubber or cover, or both, must be changed. Let them stand 24 hours, tightening the tops occasionally, then draw a paper sack over each one, label plainly, and put in a dry, cool place.

CHERRY PRESERVES.—Pit the cherries, weigh, and allow a pound of sugar to each pound of fruit. Dissolve the sugar in the least quantity of water possible, and when it boils add the fruit and boil slowly 15 minutes. Then skim out the fruit and put in glass jars (those which are not air-tight answer nicely for this purpose) filling them about two-thirds full. Boil down the syrup and pour it over the cherries. If the covers do not fit, dip a paper in brandy and lay it on the top as for jelly.

CHERRY SYRUP.—This is a very pleasant beverage when added to a glass of cold water. Pit the cherries, mash them, and allow them to stand in an earthen bowl, in a cool place, 24 hours. Then drain through a coarse linen bag, and allow 1 lb. and 12 ozs. of granulated sugar to each pint of juice. Put the latter in a porcelain-lined kettle, bring it to the boiling point, and skim before adding the sugar. Let them boil together slowly for ten minutes, and when cool bottle. Two or three tablespoonfuls are sufficient for a glass of water.

CHERRY PUDDING, NO. 1.—Sift together twice one coffeecupful of flour, a pinch of salt and three teaspoonfuls of baking powder. To two well-beaten eggs add one teacupful of sugar and one of milk, and stir in the flour. Add as many pitted cherries as you prefer, and beat all together thoroughly. Turn it

into a buttered pudding mould, leaving one third of the room for it to expand. Tie on the cover and stand it in two-thirds its depth of boiling water, cover closely and boil two hours. Serve hot, with whatever sauce preferred.

CHERRY PUDDING, No. 2.—Make a rich dough, as for baking-powder biscuits. Roll rather thin, and cut out with a quart bowl; put two or three tablespoonfuls of cherries on one-half of a biscuit, wet the edges, fold at the centre, bringing the two edges together, and pinch thoroughly with the thumb and finger. Melt a tablespoonful of butter and one of sugar in half a teacupful of hot water and pour it over the rolls after they are in the tin. Sift powdered sugar over the top and bake fifteen minutes. Serve hot, with either hard or liquid sauce, as preferred.

HARD SAUCE.—Stir a teacupful of powdered sugar and a quarter of a cupful of warm (not melted) butter to a cream; flavor as preferred with lemon, vanilla or nutmeg, and set in a cool place until required.

FRUIT SAUCE.—For cherries, add one teacupful of sugar to three of mashed fruit, and thoroughly beat in four tablespoonfuls of soft butter. When light and foamy, add the well-beaten white of one egg.

FOAMY SAUCE.—Beat the whites of two eggs light but not stiff, and add one teacupful of powdered sugar and a teaspoonful of vanilla. Turn over this, stirring constantly, one teacupful of boiling milk. Lemon juice can be substituted for the vanilla if preferred.

CHERRY PIE.—Cherry pie should not have an under crust, but an inch-wide strip of paste should be placed around the side of the pie plate. Put in a layer of cherries, then a tablespoonful of fine bread or cracker crumbs and two tablespoonfuls of sugar. Continue until the plate is full, then cover with a rich crust, sift one tablespoonful of powered sugar over the top, and bake.—KATHERINE B. JOHNSON, in Country Gentleman.

Hints in Pear Growing.—The American Cultivator of Boston, gives the following suggestions regarding pear orchards:

"The pear tree grows best and yields the most fruit when planted upon land moderately moist, and yet not cold. To insure this condition there is nothing better than a side hill location, though one more level may do well if underdrained, and then it is better for receiving a wash of sand from the uplands above it, which helps to warm it up. Two conditions are fatal to this fruit, and they are a lack of moisture in the soil and a lack of dryness in the soil. They may live through either for a little while each season, but too long a drought will kill the tree, and too long a wet and cold season will destroy the fruit even after it has formed. Manure too rich in ammonia will cause excessive growth of the fruit buds, and overbearing while the tree is young shortens the life of the tree, and also is apt to lessen the crop in the succeeding year."

PICKING FRUIT.

VERY person, child or adult, when plucking fruit of any sort, should be taught how to separate the stems from the twigs or spurs without damaging the buds that contain the embryos of a future crop. When plucking apples or pears, instead of hauling off the fruit with spurs, buds and leaves, take hold of the apple or pear and at the same time thrust the thumb nail against the base of the stem and pull on the fruit, and thus sever the stem from the fruit spur at the seam prepared in the growth of the stem and spur for the separation of fruit and spur. When plucking cherries, take hold of the long stems and separate them with the thumb nail, handling the fruit by the stems rather than by taking hold of the fruit. If the hand clasps a cluster of cherries, and the fruit is hauled off carelessly, the fruit-spur will be broken off together with all the half mature fruit. Then, if the cherries are fully ripe, and they are clawed off without taking hold of the stems, the fruit and stems will be separated, to the great damage of the ripe fruit. When cherries are to be used immediately they may be pulled off the stems. But when the fruit is to be sent to market, the stems should not be separated, as the rupture of the fruit incident to the separation of the stems will hasten decay and damage appearance, because as soon as the stems of cherries are removed from the fruit the juice will flow out.

Almost every variety of cherries fail to ripen with desirable uniformity. For this reason the persons who pluck the fruit should be instructed to glean only the ripe fruit without hauling off immature specimens. But whoever is allowed to pluck cherries should have this brief precept—"be careful of the fruit spurs"—reiterated, until he or she will understand that the fruit buds, the fruit-spurs, the little branches that are loaded with fruit, must not be crushed by the feet or pulled off by careless hands. Make every dullard understand that every twig and fruit-spur broken off represents a cluster of cherries of next year's crop, and the fruit for many future years actually lost by inexcusable heedlessness. There should be many placards posted up where pickers can read the important words: "Do not break off the fruit-spurs."—SERENO E. TODD, in Country Gentleman.

New Raspberries.—*Heebner* is a new red raspberry, which Mr. W. W. Hillborn, of Leamington, Ont., is growing from the seeds of the wild raspberry. The quality is good and the bushes very productive, but too soft for a distant market. Mr. Craig, in his Raspberry Bulletin, estimates that it would yield more than four times the Cuthbert at Ottawa. *Columbia*, according to the same authority, is a purple berry, seedling of Cuthbert; it much resembles Shaffer, but is firmer and less acid. *Royal Church.*—Mr. Craig says he finds this not as vigorous or as hardy as the Cuthbert. *Superlative* also, he says, is deficient in vigor and hardiness.

CANADIAN SMALL FRUITS.

THE Agriculture Committee spent a busy and profitable couple of hours on June 6th. The subjects before them were "The Branding of Cheese," and an address on "Fruits," by John Craig Horticulturist at Experimental Farm.

Mr. Craig, in his address, spoke of the development of the fruit industry in the various provinces of the Dominion, and detalled the result of his experiments with regard to keeping fruits in cold storage. When asked by Mr. Carpenter to state his opinion of the feasibility of putting Canadian small fruits on the English markets, the Horticulturist said: "That is a question which is not only a profitable one to discuss, but certainly a feasible one. I do not see why grapes, plums and peaches, and early pears could not be put into direct cold storage warehouses and then sent in refrigerator cars and put on board steamers provided with cold storage compartments, and put in the English market in good condition, in view of the fact that the cold storage system is to be introduced in connection with butter. Whether they would reach the English market at a season when good prices prevail is a matter to be investigated."

In answer to Mr. McNeill, Mr. Craig said he did not know of any place in this country where Newton Pippins were successfully grown, and he was not prepared to say, he was not aware of any place where that could be done. In the Grimsby district last year, where spraying was practiced, he saw some very good Newton pippins. Mr. Craig thought the fruit growers would make more money if they would give a little more attention to the kind of package they used, and exercised a little more care in grading their fruit. He pointed out how carefully California fruit was put up, and it competed successfully with our home-grown fruits. It showed, he said, that our growers could afford to spend a litile more money in making their fruit packages attractive.

On motion of Major Carpenter, seconded by Dr. Roome, a motion was adopted to the effect that "in view of the rapidly growing importance of the fruit industry to the people of a large section of the Dominion, and of the importance of and difficulty in establishing a good reputation in the English market, this committee is of opinion that the Government would be justified in adopting some method of assisting our fruit growers in placing their fruits on the English market, believing, as we do, that if some shipments of fruit can be made by the government it would give us a standing it cannot secure when sent by individual shippers."—Hamilton Spectator.

The Columbia raspberry, according to the Ohio Experiment Station Report, is a stronger grower than the Shaffer, and the berries a little brighter; but the varieties are very similar.

THE PEACH LEAF CURL.

THIS peculiar disease is widespread both in this country and in Europe, occurring wherever the peach is grown. It often severely injures nursery stock; young, thrifty-growing trees are more subject to its attacks than those more mature. The curl is limited to the period when the young shoots and leaves are most tender; after the tissues of these parts are fully formed or matured they are no longer affected. The disease shows itself as soon as the leaves are expanded. By the first or middle of June the only signs of the malady are the withered leaves on the ground and the shriveled shoots on the tree; new leaves have already developed on the lateral twigs. The illustration, Fig. 797, shows the characteristic appearance of a peach leaf affected with the curl, and the same engraving illustrates a twig diseased from the same cause. Frequently the entire leaf is involved, the diseased part being somewhat thicker and of a more fleshy texture than that in health. The under surface is usually smooth, but the upper has a more or less mealy appearance. When the leaf stock is affected it swells to several times its normal thickness and seldom attains its full length. These portions have a pale green color, the surface is swollen and uneven, and turns black and dies. The cause of peach-leaf curl is a minute fungus called Taphrina deformans. It is closely related to the fungus which causes "plum pockets." The mycelium or spore-producing part of this fungus forms a network of threads resembling a string of beads in the tissues of the peach leaf. This is illustrated in Fig. 798. From these threads the spores or seeds are produced by which the disease is spread from tree to tree. These falling on young tender shoots penetrate their substance and cause them to curl up and finally die. So little is really known of the life history of the curl that little can be said regarding preventive measures. Removing and destroying all the leaves and young shoots

FIG. 797.—LEAF CURL, AFFECTED LEAF AND TWIG.

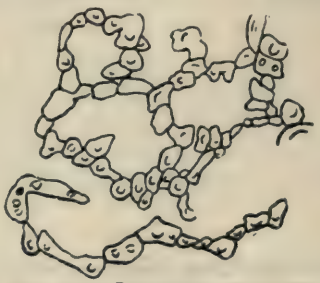


FIG. 798.—LEAF CURL FILAMENTS MAGNIFIED.

as soon as they show signs of the malady, and at the proper season, cutting well back the branches where the disease existed, is the best course, and ought to mitigate the evil. As an experiment it is suggested that the trees be sprayed before the buds begin to swell, with a 30 or 40 per cent. solution of sulphate of iron.—Orange Judd Farmer.

GROWING MELONS.

THE best soil for the watermelon is a light, warm, sandy loam, yet I find some soils, that will not produce fine melons with all other essentials given. Whatever tends to compact the soil, whether rainy weather or a deficiency of vegetable matter, is detrimental to the crop. I take the best soil I can arrange to plant, and in the fall scatter tobacco stems liberally over the ground. I find, contrary to many, that the richer the soil, provided it be warm and light, the surer the success. I break the ground very deep before the stems are put on, and then before planting break a little deeper, then work it mellow to the bottom. If one is not careful they will get the soil mellow on top to perhaps half the depth, and the other half full of large clods. This should not be. I prefer marking both ways, as the plants can be worked better. At each crossing I put two shovelfuls of good manure. The best I have used was well-rotted, forest leaf mould and stable manure put in alternate layers of equal proportion. This well-rotted and turned over until well mixed. This manure may not rush the plant while young so much as all stable manure, but it will bring more and larger fruit. Bones dissolved in ashes and a handful of the mixture put in the hill adds greatly to the crop.

I make large hills (not high up, but around) and drop at least a dozen seeds in a hill. I shall this spring make a line across the hill and plant on one side; then in about ten days plant the other side. Planting so many seeds in the hill has two important reasons. So many plants aid each other in raising soil (which is apt to become crusted on top), and they will come up better. Some seeds give stronger plants than others, and will bear better fruit. Planting so many in the hill we are more apt to get strong plants. These can be selected after the plants are some size. I leave only two plants in the hill. As soon as the plants are up well, the soil should be made loose around them, being careful not to disturb the young plant. I like deep cultivation; at least for the first three cultivations, then shallow until done. I plow the ground thoroughly between the hills at each plowing, and I like to cultivate them every few days. In cultivating the vines the least they are molested the better, as moving them injures them after they begin to run much. I may give a few more hints on melon culture before selling time.—THOS. D. BAIRD, in American Farmer.

MAKING A RESERVOIR FOR WINDMILL IRRIGATION.

WIND-PUMP irrigation will be depended upon more and more wherever the rainfall is apt to be deficient. The accompanying illustration taken from a photograph, represents a section of one of the many reservoirs in Meade County in south-west Kansas which have been used satisfactorily for some time. The pump is larger than the average in this locality, having a 12-inch cylinder, a 12-inch discharge pipe and a 10-inch stroke; it lifts the water 14 feet at the rate of 175 gallons per minute.

The preparation of the reservoir is most important, and in order to assist any who contemplate such an addition to their farm improvements, I will tell how I made mine. Select a site higher than the ground to be watered. Lay out the reservoir corresponding in capacity to the power of the pump. The pump must be capable of filling it in two or three days. Remove all sod, placing it beyond the limits of the walls. Do not use it in forming the embankment. Then plow and scrape, dumping where the wall of the reservoir is wanted. Continue until the work is completed, driving over the wall. Leave the inside sloping so the waves will not injure it. When the excavation is of the desired size plow the bottom and pulverize thoroughly. Hitch a team to a block, road scraper or other suitable object, turn in the water and begin to puddle by driving along one edge and continuing until the whole surface is puddled. This will cause a precipitation of sediment which will fill the pores of the soil and enable it to hold water quite well. The bottom will then be 12 to 18 inches lower than the surface of the ground outside, but that much water must always be left in the reservoir to preserve the puddling, for if it gets dry or freezes the work must be done over again. If the reservoir is small, say 30x50 x3 feet, some dirt for the wall must be obtained from the outside. An outlet can be made of four 2-inch planks long enough to reach through the wall. Saw the inner end sloping and provide it with a valve made of 2-inch board, and on the same principle as the valve in an ordinary pump.—American Agriculturist.

FIG. 799.—IRRIGATION BY WIND POWER.

A FRUIT HOUSE.

N some localities it is rather difficult to secure a good cellar without considerable work. Often draining by digging a trench is necessary; and when this is the case it will often pay to build a fruit house above the ground, rather than to run the risk of water flooding in and damaging the fruit and vegetables. A fruit house, if well built, so as to be frost-proof, is much more convenient than a cellar in many ways, but good care must be taken in doing the work if good results are to be secured.

Two by six inch studding will be the best; that is, not less than this should be used. They can be placed two feet apart, and it is usually best to brace the corners. Eight feet is plenty high, and, in most cases, six will be sufficient. It should be built close to the ground, so that it can be banked up readily on all sides. On the outside rough boards can be nailed on first, and over this a layer of tarred paper or heavy straw paper, and then the whole should be carefully weatherboarded.

When it can be done, it will be best to fill the space between the studding with sawdust, taking care to fill in tightly. Rough boards can be nailed on the inside, and over this tarred paper should again be tacked.

Overhead a tight layer of boards should be put and on them a good layer of sawdust. A chimney, or place for ventilation, should be provided. Care should be taken to make tight; the door and ventilator should be all the openings. Good, close-fitting doors, one to open outside and one inside, will help. Boxes or bins should be built inside and about four inches away from the wall. This will give air space between the wall and the fruit. To make doubly sure, an old stove set in the room in which a little fire may be made in the severest weather, will be found a benefit, as a very little fire will lessen very materially the danger of damage. A house of this kind, in a winter like the last one, will keep fruit and vegetables without freezing, but in winters such as we sometimes have a little fire will be necessary.—Fruit Growers' Journal.

Pruning Grapes in Summer.—After the bunches of grapes have formed on the new vine profitable work can be done by going along pinching off the vines just above the fourth leaf, or one leaf above the last bunch of grapes. This will turn much of the sap into the new vine which is to come out, either at the ground or near to it, to make wood for next year when the old vine is cut away. After this year's vines have been pinched off, a new branch will shoot out at the base of each leaf. If these are also pinched off when but a few inches long, no more vines will start out from them and all the sap for this season will go into the fruit and into the new vine which shot out from the ground.—Orange Judd Farmer.

TOMATO CULTURE.

CHAPTER XII.

How to Make Picking and Shipping Boxes.

For ends, take good dressed pine lumber, ½ inch thick and 8 inches wide. Cut them so that the upper edge will be 9¾ inches long and the lower edge 7⅝ inches long. For sides, use lumber 8 inches wide and ¼ inch thick. Cut them so the upper edge will be 19 inches long and the bottom edge 17 inches long. Cut bottom of same stuff slack 17 inches long. Nail together with wire nails, medium fine, 1¾ inches long. Nail on outside of box in centre a strong basket handle, using ¾ inch wire nails. These boxes will weigh three pounds each and will hold half a bushel without heaping. They will last as long as five of the common baskets and they cost but little more. They are better than baskets, for shipping. If they are wanted for shipping make covers 8 inches wide and $\frac{3}{16}$ inch thick, cut them off square 18⅞ inches long. Now take a strip ½ inch square, cut off two pieces 7¾ inches long, bevel them a little so they will fit exactly just inside of the box, close to the ends. They should fit in so the top surface will be flush with the sides and ends. The cover is to be nailed on to these pieces with ¾ inch wire nails driven through and clenched, so that when the cover is put on, it will show the fruit ⅞ of an inch on each side. This space will also give all the ventilation required. The cover will be one ⅝ of an inch shorter than the box at each end, so it will not catch in handling. If desirable to show the fruit more or have more ventilation, use four slats ¼ inch thick and 1 inch wide instead of the close cover; nail them on so as to leave all the spaces the same width. I have taken pains to enquire of all my customers to whom I have shipped tomatoes in these boxes, as to their value compared with baskets for shipping. All of them, without exception, declared that the boxes were much better than baskets; the fruit was not bruised, and it came out in better condition. The reason why they carry better is that they never spring in and out like baskets do when they are handled roughly (as they are sure to be in transit). Again, the boxes are strong enough to be piled ten high without any injury to the bottom ones. To fasten the cover down bore a ¼ inch hole through the cover inside the cleat, and another hole ¾ of an inch below the edge of the end, and wire the cover down with fine annealed wire.

CHAPTER XIII.

How to Make Market Boxes.

These are used for carrying tomatoes to market on a wagon. Dimensions and description: End pieces 6 inches wide, ½ inch thick and 16½ inches long, two side pieces 6 inches wide, ⅜ inch thick and 17½ inches long. Nail those

together. Then cut two bottom pieces 8¼ inches wide, ⅜ of an inch thick and 17¼ inches long. Nail them on with edges flush with the sides. There will be ¾ of an inch space open in the centre; this space is to let the hand board of another box enter. Hand or centre pieces should be 6 inches wide, ½ inch thick and 16½ inches long. In the centre of this board and one inch in the clear below the upper edge cut a neat, well-finished hand hole. One inch each side of the hole drive a three inch wire nail and counter sink them ¼ of an inch. These nails are to keep the centre piece from splitting. Nail this hand board in the centre of the box, directly over the open space in the bottom, and let its edge set up above the ends ⅝ of an inch. The edge enters the bottom of next box when set upon it. If the boxes are bound at the corners with strips of zinc 4 inches long and ⅜ of an inch wide they will last much longer. They should be made all of the same material and all of the same thickness, so that when finished they will all be the same weight. Give them two coats of paint and stencil name on them.

These boxes if well made, will last at least twenty years. I have some of them that have been in use every season for twenty-five years and are in fair condition yet. They hold half bushel each, a peck on each side; and when evened over at the top they sit over each other without bruising.

Their advantages are as follows:

1st. They are my own invention and not patented, so that all may have the benefit of them.

2nd. They are light and have a hand hole in the centre so they are almost as easy to handle as baskets.

3rd. A double row of them fits into the ordinary wagon box, and makes a compact load without wasting room.

4th. They can be loaded over each other seven or eight boxes high, and they will ride safely, so that a full load of fifty bushels can easily be put on a market wagon.

5th. The fruit is divided into peck lots, making it very convenient to handle at the market, either in small or large quantities; there is almost no pressure or weight to bruise or injure the fruit. Those boxes will be found very useful for nearly all kinds of fruit and vegetables.

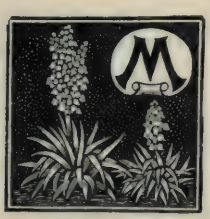
(To be continued.)

St. Mary's, Ont. S. H. MITCHELL.

The North Star Currant is noted as a free, healthy grower. At Maplehurst this currant is just now bearing its first fruit, and we consider it too small to be of any value. The market wants a large-sized berry, and small ones bring a low price. Its vigor of growth is the one merit of this variety.

STRAY NOTES.

Covering Strawberries—Keeping Pigs—Overproduce, etc.



MANY start out with great zeal to cultivate strawberries, but fail to count the cost, *i,e.*, the patience, attention, and exercise of judgment needed, as well as the art of "knowing how," and in two or three years give it up as a bad job. It certainly requires the above-named qualities to insure success, and the winter protection is an item that cannot be slighted without loss. I have tried all sorts of material for covering, and at different times,, and have settled down to the practice of using clear oat straw when I can get it, and covering *early*, before any hard frosts, putting on just enough to prevent the thawing and freezing weather to affect the ground and cause heaving. Before this spring I was in the habit of uncovering before Jack Frost had taken his final departure, but I left it on three weeks later this spring, and now at picking time, reap the reward. The foliage and berries are ranker an finer growth, having met with no chilling check from the frost. Care should be taken before the snow comes, to cover any spots where the snow has blown off. as the neglect will become apparent when the foliage begins to grow. Oat straw is a light, buoyant covering, not likely to pack and lie too heavy on the plants.

Does it pay for gardeners to keep pigs? A neighbor, John Smedly, living in Nepean, three and a half miles from Ottawa, says, from his experience, that it *does* pay. Last season he kept ten in a yard of about an eighth of an acre, all summer and fall, into which he had deposited over a hundred loads of manure. The pigs kept it well mixed by rooting and added to its value their own droppings, making it worth double what it would have been had it lain dormant all the season. After counting the cost of keeping, and what he paid for the pigs, he realized a fair margin, besides the improvement of his manure. The experiment is worthy of imitation by any who fancy keeping pigs.

Are we likely to have an overproduction of fruit this year, as to seriously affect the profits of fruit growing, is a question one is inclined to ask just now. Everybody is taking a hand at fruit growing; many are starting out in the work of tilling the soil that have got tired of other occupations, many are driven to the country by the hard times in the cities and towns, thus increasing the number of producers and lessening that of consumers, and that to the extent as to throw things somewhat out of balance to insure a healthy state of things. In a time of general depression, as at present, all lines of industry suffer more or less, and it would be a wonder if fruit growing and gardening in general did not feel the stagnant stream of the times, and prove less lucrative than in ordinary seasons of prosperity. No doubt many who have gone into gardening with little or

no experience will change into other occupations as soon as possible, leaving the field to those who are more accustomed to it, and who are in circumstances to persevere until the present stringency in the money market is past. About every twenty years there is a tightening up time, when everybody gets very poor all at once, and those who have money are careful to keep it until a general relaxation comes, when general confidence is restored and matter flows on in their usual course. A careful practice of economy and general management will enable gardeners and fruit growers to tide over the present year or two and go on again as usual.

Nepean. L. FOOTE.

SMALL VS. LARGE FRUIT FARMS.

ANY Canadian farmers are land poor. They have only a small capital, their income is small from all sources, and they cannot afford to hire many hands, nor to invest much in convenient fertilizers. Therefore they spread over a hundred acres of land the amount of labor and capital that should be devoted to one-tenth that extent—and in consequence brings no return—it is spread too thin.

The time is passed when it is only necessary to tickle the soil to reap golden harvests, even in grain farming; but, in fruit growing, high cultivation is still more essential to success. Ten to twenty-five acres of fruit is enough for most men, who have a very limited capital. Given such a place, well tilled, and planted with judgment, to such fruits and such variety of fruits as will certainly pay well, and there is no question concerning the results. There will be success.

Many buyers of farms think it is a great advantage to secure a farm already well planted, but oftentimes even an orchard of bearing trees are more an encumbrance than an advantage, for, of late years, they occupy the ground and give no crop of fruit. Especially is this the case with certain varieties, and, therefore, unless one knows what varieties are in an orchard, he may find his purchase a great disappointment.

We would advise our young friends of the O. A. C. and elsewhere, not to buy too large a farm, unless they have plenty of capital, and plenty of knowledge how to use it.

The Dyehouse Cherry, according to a writer in the Rural, is the earliest cherry, being ten days in advance of Early Richmond; the tree is hardier and very productive. Compared with the latter variety, it is better flavor, being less acid.

The Red Jacket gooseberry is also counted as "the best grower of all—the foliage being perfectly healthy."

FLOWER BORDERS.

I WISH that instead of saying flower-bed we might say flower-border. Any good place should have its centre open. The sides may be more or less confined by planting of shrubs and trees and many kinds of plants. This border-planting sets bounds to the place, makes it one's own ; it is homelike. The person lives inside his place, not on it. He is not cramped up and jostled by things scattered all over the place, with no purpose or meaning. Along the borders, against groups, often by the corners of the residence or in front of porches,—these are places for flowers. When planting, do not aim at designs or effects ; just

FIG. 800.—AN ARTIST'S FLOWER BORDER.

have lots of flowers, a variety of them growing luxuriantly, as if they could not help it.

I have asked a professional artist, Mr. Matthews, to draw me the kind of a flower-bed that he likes. It is shown in Fig. 800, at the beginning of this bulletin. It is a border,—a strip of land two or three feet wide along a fence. This is the place where pig-weeds usually grow. Here he has planted marigolds, gladiolus, goldenrod, wild asters, China asters, and—best of all—hollyhocks. Any one would like that flower garden. It has some of that local and indefinable charm which always attaches to an "old-fashioned garden," with its exuberant tangle of form and color. Every yard has some such strip of land along a rear walk or fence or against a building. It is the easiest thing to plant it,—ever so much easier than digging the hideous geranium bed into the centre of an inoffensive lawn.

There is no prescribed rule as to what you should put into these flower-borders. Put in them the plants you like. Perhaps the greater part of them should be perennials, which come up of themselves every spring, and which are hardy and reliable. Wild flowers are particularly effective. Everyone knows that many of the native herbs of woods and glades are more attractive than some of the most prized garden flowers. The greater part of these native flowers grow readily in cultivation, somes even in places which, in soil and exposure, are much unlike their native haunts. Many of them make thickened roots, and they may be safely transplanted at any time after the flowers have passed. To most persons, the wild flowers are less known than many exotics which have smaller merit, and the extension of cultivation is constantly tending to annihilate them. Here, then, in the informal flower-border, is an opportunity to rescue them. Then one may sow in freely of easy-growing annuals, as marigolds, China asters, petunias and phloxes, and the like. One of the advantages of these borders is that they are always ready to receive more plants, unless they are full. That is their symmetry is not marred if some plants are pulled out and others are put in And if the weeds now and then get a start, very little harm is done. Such a border half full of weeds is handsomer than the average well-kept geranium bed, because the weeds enjoy growing and the geraninms do not. I have such a border, three feet wide and ninety feet long beside a rear walk. I am putting plants into it every month in the year when the frost is out of the ground. Plants are dug in the woods or fields, whenever I find one which I fancy, even if in July. The tops are cut off, the roots kept moist, and even though the soil is a most unkindly one, most of these much-abused plants grow. Such a border has something new and interesting every month of the growing season; and even in the winter the tall clumps of grasses and aster-stems wave their plumes above the snow, and are a source of delight to every frolicksome bevy of snowbirds.—BAILEY, in Cornell Bulletin, No. 90.

CACTUS NOTES.

WE next come to the Globular, or "Hedgehog" cacti, consisting of Echinocacti, Echinocereus, Echinopsis and Mamillaria. The other classes, Melocactus and Pelecyphora cannot be successfully grown by amateurs, and are not worth considering in these notes. But the four classes named above are the gems of the Cacti fancier, as they comprise many of the quaintest and most handsome of plants. The Echinocacti are a large class, over 200 varieties being cultivated, and new ones are frequently found. Some grow up very large; a specimen of Visnaga, 9 feet in height, 9½ feet in circumference, and weighing a ton, was taken to Kew Gardens, England, while others never attain a size of over an inch or two in diameter. They are generally ribbed, spines in clusters on the ribs, which are usually prominent. A few are separated into tubercles like the Mammillaria; flowers near the top or centre; and large in comparison to the size of the plant. many of them remain open for days. Their cultivation is simple; they do not require as strong a soil as Phyllocactus; made porous with sand, sufficient water when growing, little, if any, in winter, sunlight at all times—they will not bloom unless placed in the sun. We can only mention a few of the most desirable and best known. Grusoni or The Golden Cactus (named after Gruson, a manufacturer in Madgeburg, Germany, who is said to have the finest collection of cacti in Europe), is generally perfectly globular in shape, its golden-colored, almost transparent spines, closely resembling a ball of gold. This is a plant that is always admired by every one; a specimen 18 inches in diameter was the centre of attraction, and the gem of the collection in the Mexican exhibit, at the World's Fair, in Chicago; small plants are equally handsome, and excellent growers and never troubled with insects. Cornigerus or Horn-bearing, another very handsome plant; ridges, prominent spines in clusters, the centre one flat and tongue like, curved at the end, the broadest spine of any cactus; purple in color and as strong as iron, other spines round and strong, a good grower and excellent bloomer; flowers purple and not very large. Capricornis, one of the most peculiar looking, with eight thin prominent

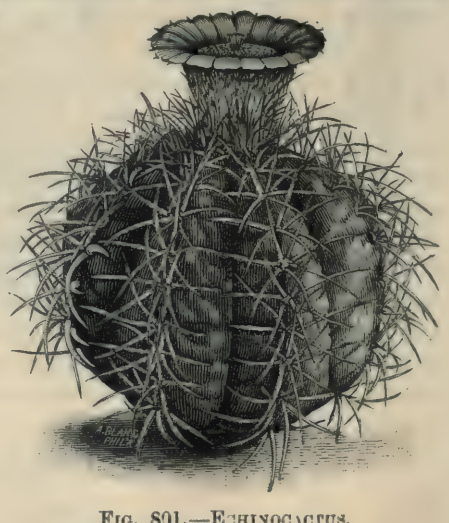


FIG. 801.—ECHINOCACTUS.

ridges, spineless, except for a few long flexible ones near the top, thickly covered with small white spots, a good grower and bloomer; flowers yellow and large, a very satisfactory plant. Cylandraceus has spines two to three inches long, interlacing and completely covering the plant; blood read in color especially when wet; flowers yellow in color and easily produced. Horizonthalonius, with nine to ten thick prominent ridges, spines in clusters in centre of ridges look like spiders; an excellent bloomer; flowers purple, very handsome. Longehamatus, with spines from three to six inches long, a rapid grower and good bloomer; flowers yellow. Multicostatus, one of the most singular, with from ninety to one hundred and twenty ribs twisted in every direction, few spines; flowers white with a purple stripe in centre. Setispinus, the best bloomer of all; flowers large yellow with a red circle inside; ribs numerous, spines hooked. Texensis, The Devil's Pin-cushion, round and flat, slightly depressed in the centre; flowers large, yellowish-rose and fringed.

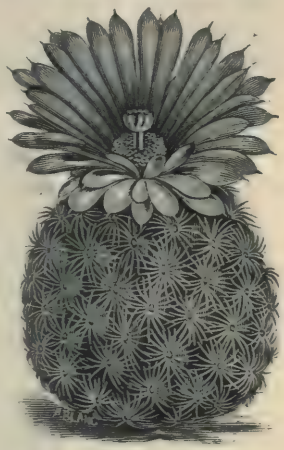


FIG. 802.—MAMILLARIA.

These are a few of the best known of this rich and varied class selected from the writer's own plants, but many of the others are equally desirable. The Echinocereus are botanically different from the last described class, but an amateur might have difficulty in deciding between them as in all principal points they are similar, globose, ridged and spiny, though the spines are generally smaller and finer; they require similar cultivation, soil, watering, etc.

FIG. 803.—ECHINOCEREUS.

The varieties are not so numerous, but are all good bloomers, E. C. Candicans is probably the best known, and few handsomer plants can be found, covered with a network of spines so close that they can be handled without trouble, and varying in color from cream to red, forming rings of color round the plant from which it derives its name of Rainbow Cactus, a free bloomer; flowers magenta, shading to white, are unsurpassed. E. C. Pectinatus is one of the best bloomers; flowers three to four inches across, spines white, com-

pletely covering the plant. There are many more of this class, all desirable The Echinopsis are different from either of the other two classes, and more common, but are all good growers and bloomers, generally pear-shaped ; spines. fewer, shorter and softer, flowers lower on the plant than the others, with a long

FIG. 804.—MAMILLARIA.

stem. Eryisis, a splendid night bloomer ; flowers four inches across, richly fragrant ; a double flowered variety of this is even more desirable. Mulleri, a new and splendid plant, flowers open every day for a week, fragrant. All strong growers, making good roots and producing offsets freely ; are readily propagated but if you want flowers keep the offsets rubbed off. With their shiny green coat, not hidden by spines, they are always handsome and satisfactory plants.

CACTUS CRANK.

Cyclamens.—When the corms are laid up dry for any time they sustain a loss of vitality which prevents them making more than a spasmodic effort to grow, throwing out a few leaves, and then remaining stationary. The right way to treat old bulbs is to water only when dry after flowering until the foliage dies away ; then bed them out during the summer, or else shake all the old soil away, and re-pot in free soil, with plenty of white sand in it. Give good drainage, and stand the pots where they can be shaded from hot sun, allowing the soil to dry out between each watering. This will cause them to break regularly and strongly, and as they advance in growth they may be watered more freely. By late autumn the soil in the pots will be full of roots, and the buds will be abundantly formed over the plants.—Pop. Gardening.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

GRADING SPECIMEN FRUIT.—Sometime ago a scale for sizing specimens of apples for descriptive purposes was given in this Journal. This scale is useless for any fruit beside the apple, and something more general is needed. In our own Ontario Fruit Experiment Stations it has been proposed to give the extreme length and the extreme breadth of all fruit in inches.

In a letter of the 3rd prox., from T. T. Lyon, South Haven, Mich., President of the Michigan Horticultural Society, he writes on the subject as follows:

"In the matter of grading specimen fruits—I sometime since proposed to Pomologist S. B. Heiges, to take the medium between the vertical and transverse diameters of a specimen ($\frac{V+T}{2}$) as the measure of size. He did a little experimental measuring upon that plan; and reports that in some cases, giving the *same diameter* when determined as above, there was a real difference of bulk of full 50% as measured by the displacement of water. Therefore I surrendered at once.

I admit that the displacement of water would be an accurate measure of size. But I claim that the *value* of a specimen, for any *useful purpose*, is more exactly expressed by its *weight*. For this reason, and for the reason also that few persons would be likely to provide themselves with the needful graduated vessel for measuring size by the displacement of water, I propose to drop *size* from the list, and to substitute *weight in ounces*, in the description of specimens, since *scales* are readily accessible to every one.

True, this would be a rather wide departure from a universal practice; and yet *weight* will always supply a ready means of approximately determining size when needful. It is intended to describe by weight in our next bulletin.

NETTING FOR PROTECTION OF FRUIT FROM BIRDS.—In reply to our inquiry Mr. Henry R. Boardley, of Lowestoft, England, writes as follows regarding garden netting: "I have on hand a very large stock of the sizes given below, as per sample piece enclosed. It is a second-hand article, but strong and thoroughly repaired; the prices are free on board cars here for cash:

100	yards long	1	yard wide,	£1, 6s. 3d.	per	1000 yards,	2s. 7½d.
100	"	2	"	£2 12s. 6d.	"		5s. 3d.
100	"	3	"	£3 18s. 9d.	"		7s. 4½d.
50	"	6	"	£7 7s. 7d.	"		7s. 4½d.
50	"	4	"	£5 5s. 0d.	"		5s. 3d.

Or any lengths or widths you may require at proportionate prices. 2½% for cash for orders amounting to £50 worth and upwards.

Persons who are badly troubled with birds could use this netting to excellent advantage, covering the tree or bush completely.

EXTRAORDINARY SALE OF APPLES.—Messrs. Hart and Tuckwell state that on May 22 they made a most extraordinary sale of apples. Two barrels were sold at the almost fabulous price of $25.00 per barrel. The variety was named Longevity, and these were the first two barrels of this kind ever sold in Canada. The apples were exceedingly fine samples, somewhat resembling Cooper's Market. They were grown by Dr. Young, of Adolphustown, Ont.

GERANIUMS FOR WINTER BLOOMING.—Prepare the plant in July or August, by nipping off the tops to make the growth strong. Take up about September, pot and replace in the bed, thus retaining the appearance in the beds. Take up when in danger of freezing, and they will bloom about Christmas. So says Prof. Fletcher, of the Central Experiment Station, Ottawa.

THE HORTICULTURISTS' RULE BOOK.—A compendium of useful information for fruit growers, truck gardeners, florists and others, by L. H. Bailey. Third edition, revised and extended. Published by MacMillan & Co., New York, 1895. Price 75 cents.

This is a book which we can confidently commend to every gardener. It contains the very information which he always wants, and never knows just where to find. Insecticides, fungicides, injurious insects, plant diseases, seed tables, plant tables, computation tables, rules, etc., are fully treated in a book of over 300 pages. Our subscribers will note that we are offering it to subscribers in place of a plant during the summer months, for 25 cents additional to subscription.

THE RUSSIAN BALDWIN.—Dr. Hoskins, of Newport. Vt., writes concerning this apple: "It is proving to be a promising orchard apple with me, and I think well worth extensive production in the northern New England States and

Canada, if not elsewhere." The Rural New Yorker has said of it: "Equal to the Baldwin at its best." Mr. R. W. Shepherd thinks very highly of it. The single original tree is yet quite small, nine years planted, but it has borne large crops for its size for the past four years, and at the same time made good growth. As yet it is in its experimental stage. Of course, it may under other conditions fail to justify its present promise. A great disappointment has been felt all over the cold north that so few of the Russian apples have shown keeping qualities adequate to the demands of trade. Here seems to be an exception.

MR. E. B. STEVENSON, of Lowville, our special experimenter in strawberries, writes: "The frost caught us badly. Some of my extra early varieties, such as VanDeman, Beder Wood and Cyclone, began to bloom on May 6th and 7th, and some were set quite a size when the frost came May 13th, and killed everything in sight, even the leaves of many of them and the fruit stalks. A good many have sent up a second lot of fruit stalks, which may ripen late. The second bloom was from May 22nd to June 3rd, and some as late as June 6th and 7th. We have nothing nearly ripe yet, June 12th. I have made a number of important crosses again this spring. I have used Woolverton and Clyde with which to fertilize. I have some fine young plants of Timbrell crossed with Marshall, also with Brandywine. I feel sure that my varieties are true to name, as in almost every case I get my plants from the originator or introducers. I have some fifty new ones this spring. As soon as possible I will send outlines and noter concerning new varieties for this journal.

THE FRUIT PROSPECTS.

There is much to encourage the fruit grower this season, notwithstanding the thinning of the crops by frost and drouth. The dry weather of May and June has prevented the various fungi from germinating, and, in consequence, the Province of Ontario is favored with the finest fruit of every kind ever produced. The Red Astracan, Early Harvest, Greening and Cranberry Pippin, among apples, are producing abundantly; the same may be said of the Flemish Beauty pear, while the Duchess and the Bartlett have very little fruit. The following reports from our Directors will serve to give our readers a very correct idea of the fruit prospects.

WM. W. E. WELLINGTON, Toronto, representing York, Ontario and Peel, writes: "In South Ontario, prospects at this date (June 20th) are good for apples. The crop will be a good average; the fruit has set well and the foliage looks healthy. Pears and cherries look well and will be a good crop. Plums were seriously damaged by the last frost, and will not be much of a crop. Blackberries and raspberries promise very well, providing there is rain. Grapes were cut by the frost. The first blossoms of strawberries were destroyed, but there would be a good average crop were it not for the drought. Everything depends on rain for these small fruits.

"In York, prospects for apples are very fair. Small fruits were damaged by frost, and there will be only a fair crop of pears, plums and cherries. At present the outlook for apples is a little above the average.

"In Peel, there will be no early apples ; winter apples will be average. Cherries, half crop ; pears and plums—none. Gooseberries and red currants, half crop ; no black currants. Raspberries nearly all destroyed by frost. Early strawberries, none ; medium and late, fair, but rain needed very badly.'

MR. THOS. BEALL, of Lindsay, representing the Counties of Durham, Northumberland, Peterbero' and Victoria, writes : "Judging from the reports I have received from all sides respecting the fruit crop, I think we may now safely say from present indications that the crop of autumn apples will be a good average. Winter varieties about half a crop. Pears, of all varieties grown here—excepting Flemish Beauty—is nearly a total failure, but the Flemish Beauty, which is grown to a considerable extent in this district, promises to be an unusually large crop where the trees have been carefully sprayed. Where not sprayed, the "scab" in many places will destroy the crop. Plums are nearly a total failure. Cherries are but little grown here. Strawberries are a failure to a great extent for lack of rain. Gooseberries and currants promise an average crop if we have rain soon."

MR. J. G. WHYTE, of Ottawa, representing Lanark, Renfrew, Russell and Carleton, writes : "Since my last report on our fruit prospects, we can better estimate the amount of damage by frost, which is much greater than it appeared to be then. Apples still promise a good crop. Plums almost a total failure, except our native red, which promises about half the average. Grapes in most localities will be a great failure, particularly in low grounds and where trained near the earth. In my garden nearly all the young shoots up to three feet above the ground were destroyed, while those above that escaped. Gooseberries have been more injured than expected last month. Downing will not be more than one-fifth of a crop ; Houghton not much better. Smith's Improved a total failure. Some of the English varieties promise a fair crop. Red and white currants have suffered more severely than was apparent a month ago ; they have dropped from the bunch so badly as to reduce the crop 25 per cent. Raspberries were somewhat severely winter killed, but promise a fine crop, particularly Black-caps and Shæffer. Strawberries are coming in well ; those in blossom at time of frost were a good deal injured, but the later berries are doing well, and are a good crop."

MR. A. M. SMITH, of St. Catharines, representing the Niagara Peninsula, writes :—I don't think there is much change to make in last report. Lake Shore peaches fair, back a mile or two light. Plums, pears, cherries and apples about half crop. Grapes two-thirds on lake, on mountain gone. Dry weather with frost has cut strawberries short. Raspberries will be short without rain soon. Blackberries full.

MR. GEORGE NICOL, of Kingston, representing Leeds, Grenville, and Frontenac, writes :—Apples and pears, from present appearances, promise a fair crop, fully equal to last season. Small fruits have suffered most from the late frosts, and are suffering now from drought. Strawberries not more than half crop.

MR. L. CHAPIN, of Brantford, representing Elgin, Brant, Oxford and Norfolk, writes : —The frost of May has done more damage than was at first realized. Reports from different parts of this section come, saying plums, pears, cherries and grapes all gone. Apples very scarce indeed, but what few remain at the present time promise to be a good sample. Grapes are sending out fruit the second time, but may be destroyed by early frost.

MR. W. M. ORR, of Fruitland, representing Wellington, Waterloo and Halton, reports apples about Burlington slightly below the average ; pears light, plums below average ; grapes half an average, owing to the frost. About Guelph, apples, pears and plums very scarce, few blossoms escaping the frost ; sour cherries a quarter of a crop ; grapes a complete failure, vines even killed by the May frost in many cases. Small fruits badly damaged, and few left. About Ancaster, apples look well, and sample good ; pears half a crop. About Fruitland, apples better than for years, pears below average, peaches scarce, plums average, raspberries never looked better. All trees and vines unusually healthy.

MR. STANLEY SPILLETT, our gooseberry specialist in Simcoe County, writes :—The hard frost in May—so hard that ice formed half an inch thick—did scarcely any damage to large fruits, except cherries, which will be 50 % of a crop. Small fruits were nearly as fortunate ; strawberries 99 % of a full crop. We have picked 230 baskets from 12, say, rods, without any perceptible decrease in numbers on the vines. Want of rain just now is going to cut the last pickings down considerably. Bubach and Stamen No. 2 stand the drought well, so does Williams ; Haverland suffers most. The first two have done admirably. Proximity to the lake, probably, affects us favorably here in cases of frost. Cur-

rants falling badly at present ; raspberries promise great things, but if drought continues much longer, will suffer ; but where cultivation has been attended to, they will stand a pretty hard racket of drought. Strawberries in hills permit closer cultivation and stand drought better than matted rows. Gooseberries suffered most from May frost ; they came out in spring without the loss of a twig and bloomed most profusely ; even the nursery rows taken from the mounds this spring were a mass of bloom, but only 30 % of a full crop survived the frost, and this fruit is altogether in the centre of the bushes. Neglect to prune had a reward for once. Many of the one-year bushes received for "Experimental Advt.," were poorly rooted. The severe drought of last summer was not favorable for layering, and quite a few have died in spite of all the petting I could give, even to watering. Two-year old plants are growing rapidly. So far, Red Jacket seems to have the lead, it is immensely vigorous ; Chautauqua and Queen good second. No sign of mildew to this date ; both fungicides seem to be equally efficacious. In mounding up my gooseberries last summer, I used nitrate of soda in the hills, with the result that many of the mounds had to be undermined and jarred with the end of a blunt stake to get them apart.

MR. T. H. RACE, representing Perth and Middlesex, writes :—Reports received justify the conclusion that there is practically no fruit in this district, except late apples. Strawberries are no crop, raspberries will amount to nothing, currants not a quarter crop, gooseberries all gone except some of the smaller varieties, cherries only here and there a few on some sheltered tree, and plums and pears nothing. All the summer apples, including the Duchess, have dropped off ; Colverts are showing a few, Talman Sweets a good half crop, and Baldwins, Ribston Pippins, Russets and several other winter varieties are showing very well. The Grimes Golden is a better crop than last year, so is the King ; but about here it is an off-year with the Northern Spy. On the whole, there will be a good half crop of late fall and winter apples.

MR. WM. MICHAEL, representing York and Ontario, writes :—From what I can learn of the fruit crop in this section, would say winter apples a fair crop, earlier varieties about half a crop, strawberries about half a crop, raspberries a good crop if the dry weather does not continue too long ; plums, pears and cherries light crop ; grapes were all cut down by the frost in May, but have come out again and are fairly well loaded with fruit ; the foliage on fruit trees looks well and healthy.

MR. W. S. TURNER, representing Stormont, Dundas, Glengary and Prescott, writes : —I should have written you sooner, but could not get replies in time. The fruit prospects are as follows, which you will see does not vary much from my former report :—Apples, varied reports ; in some parts the damage by the heavy frosts were very serious, in fact, almost disastrous ; in other districts, where the trees were apparently spared, the fruit has dropped. In some other parts, the frosts seemed to pass by the orchards, notably, that of Mr. Blacklock's, where the spraying experimental tests are being carried on and conducted by our own Mr. Pettit and his staff. Plums a failure, almost total loss ; grapes half a crop, other small fruits with the exception of strawberries one-third of a crop. Strawberries were not far enough advanced to be seriously injured by the frosts, but the dry weather is seriously injuring the crop.

Question Drawer.

Dandelions.

717. SIR,—How can I get dandelions out of my lawn ?

A. B. C., *Iroquois.*

We know no better plan, than cutting them out an inch or two below the surface of the ground, a laborious task, it is true. Constant mowings with the lawn mower will keep them under control.

Open Letters.

Letter from Portage la Prairie.

SIR,—I am anxious to try some of the hardiest of apple and plum seeds in this section. Already I have some seedling apples which are doing well. My gooseberries were growing too much to wood, so this spring I scraped the rich black prairie soil away from the bushes and put sand in its place, cutting around the roots, and now they are loaded with fruit, both English and American varieties. My currants are splendid, both black, white and red. I have over two thousand currant bushes. Raspberries and wild plums are a failure here. I have been here fourteen years and have quite a large garden. I am planting one pound of onion seed, one pound carrot seed, one pound beets, besides peas, beans, corn and other stuff. I have already about fourteen acres of turnips. I have two thousand cabbage and five thousand celery plants yet to plant. I think that people who do not grow a large quantity of small fruits, make a great mistake.

JOHN PARKINSON, *Portage la Prairie, Man*

Our Report Appreciated.

SIR,—The Governor-General desires me to thank you for kindly sending him the interesting and valuable Reports of the Fruit Growers' Association of Ontario, which His Excellency will peruse with care and attention, and which cannot fail to be of great practical use. I remain, yours faithfully,

W. T. G. HEWETT, *Priv. Sec.*

Government House, Ottawa, May 25, 1895.

Our Book Table.

BULLETIN 22, Central Experimental Farm, is devoted to raspberries, and contains much interesting information for planters, concerning varieties.

BULLETIN 23, Central Experimental Farm, is devoted to Spraying, Injurious Insects, etc. Both these bulletins are prepared by Mr. John Craig.

INSECT FOES AND HOW TO DESTROY THEM is the title of a remarkably convenient book for fruit growers and farmers, published by the author, Prof. J. Hoyes Panton, of the Ontario Agricultural College, Guelph. The book contains 85 pages, giving a brief description of the insects affecting the apple, the pear, the plum, peach, small fruits and vegetables, with a remedy for each. No book that we know of covers so much ground for so little money as this one; and the name of its author, Prof. Panton, should give all our readers confidence in its merits. Price 30 cents. It may be ordered through this office.

M. J. HENRY'S Catalogue of Fruit and Ornamental trees, Vancouver, B. C.

WHOLESALE CATALOGUE DUTCH BULBS, Hulsebosch Bros., Overveen, Holland, and Englewood, N. J.

PRIZE LIST of Canada's Great Fair and Industrial Exhibition, Toronto, Sept. 2 to 14, 1895.

INSECTS AND INSECTICIDES. A practical manual concerning noxious insects and the methods of preventing their injuries. By Clarence M. Weed, D.C.S., Professor of Zoology and Entomology, New Hampshire College of Agriculture. Well illustrated. Price $1.50. This is the second revised edition and a very useful book for the fruit grower. It has been prepared purposely for the farmer, the fruit grower, floriculturist and housekeeper, and has drawn upon all previously published works on insects, in order to meet the purpose for which it is written. It forms an admirable handbook, and any farmer or fruit grower who buys this book will find that his money has been well invested. The practical directions in this work are brief and to the point, and the descriptions of insects are the same, which is an advantage to the busy farmer.

THE

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THE WHITESMITH GOOSEBERRY.

FRUIT growers are too apt to copy after each other. One is successful in making money out of a certain fruit, and immediately all plant largely of that one fruit, and so overstock the market. The wisest plan is plant a little out of the popular line, and better profits are likely to result. The gooseberry, for example, has not yet been very largely planted for market in Ontario; and yet, where land is suitable for growing the finer kinds, there is money in growing it. A high and dry land, a mixture of clay and sand, highly fertilized, will grow gooseberries to the greatest perfection, and often quite free from mildew, as witness those grown by Mr. Morton, at Brampton, or by Mr. Spillett, at Nantyre. Even the English varieties may now be grown nearly mildew-free by the faithful use of the Bordeaux mixture, and if such fine English sorts as the Whitesmith and Crown Bob, why plant the smaller varieties?

In our report of 1892, page 61, Mr. Thos. Beall, who has had considerable experience with this fruit, named as the three most profitable varieties, the Whitesmith, Pearl and Downing. We think he might well omit the Downing, for the Pearl is of the same character, often indistinguishable, except that it is a trifle larger and more productive. He further thought the gooseberry one of the most profitable fruits grown in Canada. Mr. T. H. Race, of Mitchell, Ont., on the same occasion, placed Whitesmith at the head of the list for profit. This gentleman has in his garden about 200 bushes of this variety, and is not troubled with mildew. His soil is clay loam, enriched with wood ashes.

At Maplehurst, on sandy loam, this variety has mildewed badly, but for two years past we have controlled it by spraying with the Bordeaux mixture. Mr. Brodie, of Montreal, says in our report of 1888, page 92, that the Whitesmith is the principal variety grown for market about Montreal, but a Mr. Mathewson of that vicinity stated that on light, dry soil it had failed with him. The average yield of a goosberry plant is placed by several growers at from 12 to 14 quarts, and the average price 6 cents a quart.

The *Whitesmith* is described as large, roundish oval; color, yellowish white; skin, slightly downy; of first quality. The berries shown in our colored plate are larger than the average as grown in Ontario.

Do not Cut Asparagus.—There is no need of it. It is economy *not* to do so. The bed should be gone over every day and all shoots that are four inches above the surface the soil should be *broken* off. If allowed to grow taller than that, it means only so much waste. We wish only the tender, edible part. The white portion is not edible. Why, then, use a knife? why wait until the old, white portion of the stem has made a growth of several inches above the soil? The white part takes as much food from the soil as do the tender, green tips. If, then, we permit the shoots to grow six inches or more above the soil, we make a needless demand upon the vitality of the roots and the food of the soil, merely to collect a waste, worthless product.

The green, tender parts of asparagus should not be sent to market in bunches at all, but should be sold by the pound as fresh mushrooms are sold. If the writer of these notes lived in a village, or even in a city, and owned or controlled a "yard" as large as 25 x 100 feet, a portion—if but 25 x 10 feet—would be devoted to an asparagus bed. The plants themselves are beautifully feathery and graceful and may be used for boquets or masses of green,as well as the "ornamental" asparagus plumosus or tenuissimus.

Growing Aquatics.—Once upon a time the writer of this paragraph was invited to a nursery celebrated for its large business in connection with the growing of water plants, or, as they are commonly called, aquatics. As the locality was far away from lakes or ponds, much curiosity was felt as to how the large quantity of plants was cared for. It was found that nearly everything was being raised in old kegs or barrels, sunk deep into the earth, and where water could be led into them by a hose or other methods. The hint may be taken advantage of by those who read of the beauty of aquatics, but do not have lakes or ponds of their own to grow them in. Old paint kegs, or any vessels that will hold water, can be buried partly in the earth, filled with water, and seeds sown, or young plants planted in mud placed at the bottom of the water. Many of the smaller kinds of water plants can be grown in this way without any serious difficulty. The vessels need not be water-tight.—Meehans' Monthly for July.

THE CHERRY SEASON AT MAPLEHURST.

IT is not often we have such fine cherries as we have just harvested. Usually the cherry rot, Monilia fructigena, is very prevalent in Ontario cherry orchards, and destroys a large part of the crop. Some of our best varieties for market are very subject to this disease, and almost the whole crop is destroyed by it in wet seasons; but this year, owing no doubt to the dry weather, our cherry crop at Maplehurst was an excellent one. There was scarcely a trace of rot, and, though badly thinned by the frosts, yet every cherry that escaped grew to perfection.

If, by the use of Bordeaux mixture, we could succeed in producing fruit as clean as that of this present season, there is no reason we should not succeed in cherry growing and shipping quite as well as our California cousins; besides having much nearer markets. In our cities we see California cherries in perfect condition, evidently the result of the dry climate of that country.

The first really good cherry of the season with us is the *Governor Wood*. True, we have Early Purple preceding it about a week or so; but it is not a meaty cherry, and is nearly always eaten by birds, before it can be harvested. The Governor Wood, on the other hand, is not so subject to the ravages of the birds, is a delicious white-heart cherry of the best quality. This year it began ripening about the 16th of June and continued until about the 26th.

It is a productive variety, also; one tree, this season, yielded seventy-two quarts, and that might be looked upon as about half a full crop, for about half was destroyed by the frost. The tree of course is a full grown one, being about ars planted. The variety originated in Ohio

There are several other varieties of white cherries ripening about with the Governor Wood, which we will speak of more fully some other time, *e.g.*, the *Rockport*, *American Amber*, *Coe's Transparent*, and *Elton*. The latter is a particularly fine flavored white-heart cherry, of great value for canning, except for its soft flesh, and its tendency to rot in wet seasons.

The *Black Tartarian* is the most prominent of our black-heart cherries, and although of Russian and West Asian origin, introduced into England about one hundred years ago, succeeds admirably in the Niagara peninsula. The fruit is of tender flesh, dark colored and juicy, of large size, rich flavored and delicious. Birds as well as men, have a special preference for this cherry, and its tender

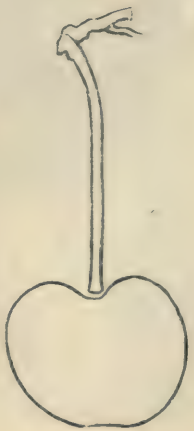

FIG. 805.
GOVERNOR WOOD.

FIG. 806.
BLACK TARTARIAN.

flesh especially invites the former. Therefore, in order to secure the crop, we find it necessary to begin harvesting them on the green side. The picking fo this cherry began with us this year on June 22nd, and the fruit not picked hung until the 30th.

The Tartarian cannot be called a heavy bearer, because the fruit does not grow in such clusters as that of some other varieties, but the large size to a certain extent makes up for the number in cluster. One thirty year old tree at Maplehurst this season yielded about fifty-five quarts, in spite of the frost.

Of other black-heart cherries, we will briefly refer to the *Knight's Early Black*, which ripens a few days in advance of the Tartarian. The fruit is not quite so long and a little more obtuse heart-shaped; it is a little more even in outline, otherwise it much resembles the latter variety.

The fruit is inclined to grow singly, and this makes the gathering rather slow; besides, it is less productive than the Tartarian. A full grown tree at Maplehurst yielded about thirty quarts in 1895, and this may be called a full crop.

The *Black Eagle* succeeds the Tartarian, beginning to ripen this season about the 28th of June. It is also a delicious heart cherry, if anything smaller than the Knight's Early Black. The fruit is grown in somewhat sparse clusters, and the tree is only moderately productive, our large trees giving about forty

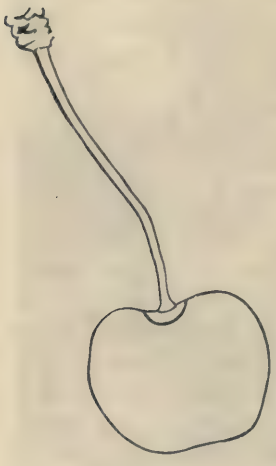

FIG. 807.
KNIGHT'S EARLY BLACK.

FIG. 808.
A BRANCH OF THE BLACK EAGLE.

quarts each. The little photograph will show the clusters on a branch of this variety.

Of the Bigarreau cherries, the leading variety for productiveness is the Napoleon Bigarreau, a branch of which, as grown this year at Maplehurst, we have photographed to accompany this article. This is no exceptional branch, for it is the habit of this variety to load in great clusters, a great advantage in harvesting, provided the fruit is free from rot. This variety is unfortunately very subject to this disease, and sometimes almost the whole crop is destroyed by it. Otherwise this is the most productive of all varieties, a hundred quarts being a very ordinary yield from a full grown tree. We add an outline of the cherry in order to show the exact size. The skin is white, well shaded with light red, and the flesh is very firm. It is one of the largest of cherries, and altogether well fitted for the commercial cherry orchard.

The *Yellow Spanish*, is another magnificent variety, often exceeding in size even the Napoleon, especially when the crop is light, as indeed it

FIG. 809.—NAPOLEON BIGARREAU.

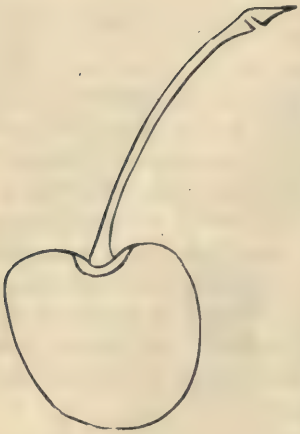

FIG. 810.
NAPOLEON BIGARREAU.

it too often is. It too is sadly subject to rot. In the year 1894 we did not gather a single basket, from this cause; every cherry rotted before ripening. This year, however, the case was wholly different, and it exceeded all past records of productiveness. One fine old tree yielded 132 quarts of the finest sample of cherries, and here again we have brought our camera into use, to show our readers a branch from this very tree, and the beautiful clusters of large sized fruit. The skin of this cherry is yellowish white, with deep red blush, and the flesh firm, and also yellowish in color.

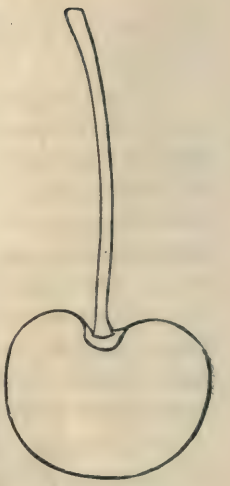

FIG. 811.
YELLOW SPANISH.

This variety is the favorite one at Maplehurst for canning for home use. It began ripening this year about July 1st. We add an outline in order to give a more correct idea of the size as grown with us in 1895.

Of this same Bigarreau, or firm fleshed type, we have two excellent black cherries ripening late in the season, viz., the *Tradescant's Black Heart*, an old and well known European variety, of dark purple skin and firm flesh and good quality. It is a very productive cherry, and one that carries well to market. The other is the *Windsor*, a new variety of Canadian origin, which is rapidly gaining favor with planters as an excellent late black cherry. The tree of this

FIG. 812.—A BRANCH OF THE YELLOW SPANISH.

variety at Maplehurst is only three years planted. It is evidently a strong, vigorous grower, and quite productive.

The cherry is obtuse, heart-shaped ; dark red in color, and the flesh quite as firm as that of Tradescant's Black Heart. The quality seems excellent for all purposes. It ripens on the 5th of July, and hangs on the tree until the 13th. Cherries picked and left in the house keep without change two or three days. The fruit is borne in clusters, which are very easy to gather.

FIG. 813.—MONTMORENCY (LARGE).

Of the Morello cherries, we have noted particularly the behaviour of the *Early Richmond* and the *Wragg* this season. After reading so much in Nurseryman's catalogues of Kentish, Early Richmond and Montmorency Ordinrire, it was rather a surprise, after fruiting them all, to find them one and the same cherry, with possibly a few slight variations where reproduced from the seeds. Suppose we call them all Early Richmond, would it not be better for all concerned ? There is also the Late Kentish, which differs chiefly in time of ripening, and which is well known throughout the country as the Common Red, or, Late Pie cherry.

The Early Richmond is a valuable cherry for pies and for canning. The tree is hardy and may be grown much farther north than the Heart and Bigarreau

cherries above mentioned, besides it is a profitable fruit to grow for market. One difficulty attends it wherever grown, and that is its susceptibility to black knot.

FIG. 814.—WRAGG CHERRY.

There is also a large fruited Montmorency offered for sale, which seems to be larger and later than Early Richmond. The accompanying photograph of a branch from a young tree at Maplehurst, three years planted, will show the fruiting habit of this very promising variety.

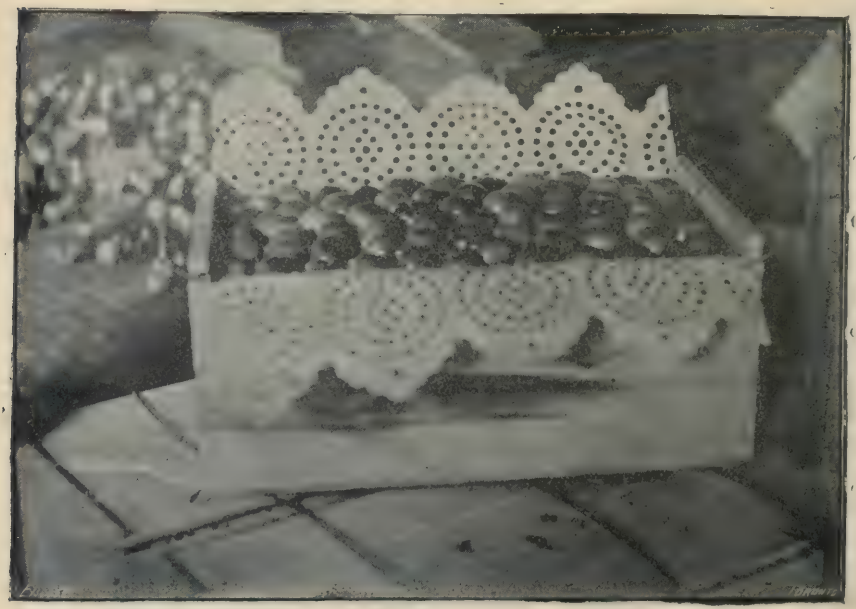

FIG. 815.—FANCY PACKAGE OF YELLOW SPANISH CHERRIES.

The Wragg trees have been planted five years, and are this year heavily laden with fruit. This variety has no very great merit to commend it that we can see, for the tree is scarcely as thrifty as the Late Kentish, and the fruit is no better, if as good. Possibly it is hardier, and possibly more productive; certainly this season it does outbear that variety.

The color is a darker red than the Kentish, and the flavor scarcely as good. A small cluster is shown in the accompanying photogravure.

The harvesting of the cherry crop is not so great a difficulty as many imagine. A good man will easily gather fifty quarts a day, and with some varieties, such as the Napoleon, he will gather one hundred quarts, or more. The usual cost of picking cherries, therefore, is from 1½ cents to 2 cents per quart.

They are usually packed in six or eight quart baskets, but this season we packed the finest in a more fancy package, viz., in boxes with sliding covers, holding about three quarts each. The cherries were packed from the bottom, paper of a suitable color being first laid against the lid. The cherries are rowed neatly against the top, and the box turned over and bottomed.

The accompanying engraving shows one of these boxes packed, and the sliding cover removed, standing upon others closed. These are crated—six in a crate—and find ready sale at fancy prices.

The Peach Tree Aphis.—The peach tree aphis, a species of plant lice, has, in many instances, seriously injured the peach seedlings in the nursery rows and one and two-year-old trees in the orchards. It is seldom that they cause serious injury to the older trees. This aphis is a small, dark brown or black, soft-bodied insect, about one-twentieth of an inch in length, and has a beak through which it sucks its food. A few of them, the males, are provided with wings, but the greater number are wingless. They feed upon the juice of the tree, and can frequently be found in large numbers upon the under side of the limbs all through the winter season. As soon as the tender leaves begin to unfold in the early spring, they concentrate their attacks upon them, and very often entirely destroy the first that appear, thereby greatly injuring the growth of the young trees. I have successfully destroyed these plant lice by spraying infected trees with a decoction of tobacco water, made by steeping 1 lb. of tobacco in 3 gallons of water. The stems of the tobacco may be used for this purpose. The kerosene emulsion has also proved effectual. This is made by dissolving 1 lb. of hard soap in one gallon of boiling water. After removing from the fire add 1 gallon of kerosene oil. Pump this mixture through a force pump back into the same vessel until it assumes a thick creamy consistency. This mixture must be diluted with 13 gallons of water before using. These plant lice are seldom found upon the limbs of the trees in the summer, as they migrate to the roots where they remain during the hot season, returning to the limbs during the early fall and winter months.—M. H. BECKWITH, Delaware Experiment Station.

CULTIVATING THE ORCHARD.

A GREAT many oppose the idea of cultivating an orchard after the trees are once set out. There is an idea that cultivation will injure the roots of the trees and so disturb them that more harm than good will result. I presume that from this idea has developed the general practice of neglecting the orchard entirely. No manure, no trimming, no budding or grafting, no pruning, and no spraying. The trees are left to take care of themselves, and the result is plain to all. Fruit growing is said to be a failure. It is all right to raise enough for home use, but there is no money in it.

An orchard needs just as much attention, in one sense, as a field of wheat or corn. The trees need spraying, thinning out, trimming, pruning, manuring, and cultivating. But the exact meaning of cultivation should be understood before anything else is said. There is no doubt about it that by loosening the soil around any plant and cultivating it with plow, harrow and hoe, we greatly hasten and stimulate its growth. Those who do not believe in cultivating the orchard claim that a good grass sod cut off smoothly keeps the soil cool and moist, strengthens the vitality of the trees, and makes them very long lived. Crops grown between the rows of trees rob the soil of nutriment that should go to the trees, and is consequently very injurious.

All of this may be granted, but that does not include the meaning of the term "cultivation of the orchard." Cultivation of crops in the orchard is very different, but sometimes more than this is required. We need to cultivate the crops and the orchard. Sufficient manure should be applied to satisfy both the needs of the trees and the plants between them Then good stirring of the soil and cropping of the plants will not injure the trees, but will make them grow faster and surer.

As to the question of injuring the trees with the plow and harrow, it may be said that these implements should not be brought so close to the trunks as to be able to touch the roots. Never let the soil get so hard and baked that the hoe will not be able to turn up the soil with a little hard labor. Use the plow as close to the trees as the outside limit of the limbs. The roots generally run just so far, and no injury can be done by plowing up the soil to that limit. Then use the small hand cultivator, spade or hoe. The soil can easily be turned over in this way around the trees, and if kept very mellow it will be no greater work to cultivate the trees than the corn or vegetables. Apply the manure inside of the root circumference, and work it in well with the hoe or spade.—Rural Canadian.

THE QUALITY OF APPLES.

TO be successful in fruit growing, more attention must be given to secure fruit of high quality. If only first-class fruit be offered for sale, the demand for it will be enormously increased. Quantity has been too long the chief aim of growers. The inferior varieties, that yield more largely, have taken the place of those of finer quality, which were shy bearers. This has been especially true of apples. Color has, however, counted as an important factor, and the red varieties, though sometimes inferior, have been in better demand than varieties superior for cooking or eating, that lacked color. Most people like a Greening apple better than a Baldwin, but because the latter has color and is quite as productive, it has had the preference. The Fall Pippin and Swaar are even better than the Greening in quality, but they are shy bearers and cannot be grown with profit without high culture and manuring. The Spitzenberg has good color, but is not a strong-growing tree and is a poor bearer, and is now not largely grown for market. One reason for defective yields and poor quality of apples is, we believe, the decrease of mineral fertilizers in the soil. The stronger and more vigorous growth of the Baldwin and Greening trees enabled their roots to gather more potash, phosphate, and other material for perfecting the fruit. But within two or three years these varieties, especially the Baldwins, have proven less reliable to produce a crop than they used to be. On the other hand, trees of the Spitzenberg variety, which were liberally manured with wood ashes and phosphate, maintained a healthy dark green foliage until fall and ripened large and finely-colored fruit. The deficiency of mineral manures is seen first in the foliage, which is easily injured by blight. Of course, wherever the foliage is destroyed, the fruit is poor or fails entirely.

We believe there is profit for farmers in New England in paying more attention to fruit growing, not merely apples but pears, plums and the smaller fruits, where there is a near market. The aim should be to grow the very best quality and depend on this to secure a paying price. The pears grown near Boston have the reputation of being the best quality grown anywhere. But if due care is given to selecting the best varieties and manuring liberally with mineral fertilizers, other localities can doubtless produce as good pears as any grown in this vicinity. The pear is a fruit which requires a good supply of phosphate. It also requires better cultivation than is usually given to apples. The pear orchard should be cultivated every year, because it is unsafe to apply the large amount of stable manure to pear trees when in grass that is needed to keep them thrifty. We can keep an apple orchard in grass and top-dress it heavily enough to offset this drain on the soil.—Country Gentleman.

COMMERCIAL GRAPE GROWING.

RAPE growing is no exception to the rule that every industry, as it develops, is continually changing. If it is profitable, strong competition comes in, and then new and cheaper methods must be adopted. A few years ago grapes were grown in many sections and shipped to market without any particular system. This haphazard practice is still carried on in some localities, but at no profit to the producer. In 1890 grapes netted the grower 24c. per 8-lb. basket. In 1894 12½c. per basket was the average, and future prices will, in all probability, be even lower. It is, therefore, essential that perfect system and close attention to details be observed, otherwise the business will be a losing one. A vineyard must be located on high ground, free from spring frost, or a single night may destroy a year's prospects. The soil must be productive, or the yield will not be sufficient to pay expenses. On poor, sandy soils, barnyard manure has been used with good results, especially when applied in connection with wood ashes. Let the system of pruning and training be the simplest and most inexpensive. Other fruits are self-supporting; but the grape must have its trellis, which, even with cheap wire and posts, is the most costly item in the vineyard. The old plan of spur pruning must be abandoned. It leaves too much wood, and the fruit is a mass of imperfect clusters, which frequently fail to ripen properly. The Kniffen system, of four horizontal canes of the previous year's growth, has proved the most successful and is being universally adopted. Under this system the clusters are of good size and seldom fail to ripen properly. Pruning can be done more rapidly, workmen "catch on" to this method more readily and are less likely to destroy the usefulness of a vine by carelessness.

Regular and systematic cultivation is most essential to success. During spring and early summer, if a spell of wet weather comes on, the vines must be sprayed with Bordeaux mixture to prevent rot and anthracnose. It is always a good plan to spray before the buds start in spring, as this prevents mischief later on. To start a vineyard new, each acre will require the following expenditure:—

600 vines, set 8 x 9 feet	$6 00
Plowing, fitting and setting	6 00
Cultivating and hoeing, 1st year	5 00
Pruning (cutting back to 2 buds)	50
Cultivating and hoeing, 2nd year	7 50
Pruning to one cane (3 to 5 feet long)	1 00
300 posts	15 00
350 lbs. wire (No. 11)	7 00
Setting posts, wiring and tying	12 00
Cultivation and hoeing, 3rd year	10 00
	$70 00

Add to this the value of land, with interest and taxes, and you have the cost at three years. Under favorable conditions the crop the third year will pay the cost of cultivation and harvesting. With the vineyard in full bearing, a crop of 600 baskets per acre would be worth, at 12½c. per basket, $75. Expenses out: baskets, $12; picking, packing, etc., $15; pruning, cultivation, spraying, repairs, etc., $30; leaving $18 per acre profit. The Concord seems to be the only variety that will sell in unlimited quantities. Other varieties are wanted only in a small way.—American Agriculturist.

HEALTHFULNESS OF FRUIT.

IF English people would only realize the immense importance and value of fruit as an article of diet in the early morning, we should find its appearance far more on the ordinary breakfast table, says the London Family Doctor. Of its healthfulness at this period of the day there can be no doubt whatever, and more fruit and less animal food would undoubtedly conduce to a much healthier condition of the body. In the morning there is an acid state of the secretions, and nothing is so well calculated to correct this as subacid fruits, such as peaches, apples and pears. The apple is one of the best fruits; oranges also are generally acceptable to most people, but the juice alone should be taken and not the pulp, and the same may be said of lemons and pomegranates. Tomatoes act on the liver and bowels, and strawberries, figs, raspberries, currants and blackberries may be classed among the best foods and medicines. The sugar in them is nutritious, the acid is cooling and purifying, and the seeds are laxative.

Fruits are the natural correctives for disordered digestion, but the way in which many persons eat them converts them into a curse rather than a blessing. Instead of being taken on an empty stomach, or in combination with simple grain preparations such as bread, they are frequently eaten with oily foods, or they are taken at the end of the meal, after the stomach is already full, and perhaps the whole mass of food washed down with tea, coffee, or other liquid. Fruits to do their best work should be eaten on an empty stomach or simply with bread—never with vegetables. In the morning, before the fast of the night has been broken, they are not only exceedingly refreshing, but they serve as a natural stimulus to the digestive organs. And to produce their fullest, finest effect, they should be ripe, sound, and of good quality. In our climate fresh fruit should constitute not the finishing but the beginning of the meal, particularly the breakfast, for at least six months of the year. The good effects that would follow the abundant use of fruits are often more than counterbalanced by the pernicious habit of saturating them with sugar. Very few fruits, if thoroughly ripe and at their best, require any sugar, particularly if eaten in the raw state; but it is unfortunately a fact, that what is intended and prepared for us as a great good in the matter of diet, should be transformed into exactly the reverse.

FALL PLANTING.

HE soil for strawberries should always be rich, and this is especially necesaary for fall-set plants, as they can not send their roots to a great distance in search of food in the short time in which they have to grow. Old, well decomposed stable manure is excellent, and plenty of it should be used. It is well to apply it after the land is plowed, and then harrow it until the horses have stepped on every square foot. If the bed be small, the manure can be worked in with the hoe. If commercial fertilizer is to be used—I always depend on it—it may be scattered on the surface near the plants as soon as they are set. If bone dust be used, it may be raked into the surface before planting. The soil should be made firm before the plants are set. This will insure their bearing, and will help keep them from being thrown out by the frost. If one is planting a large patch, which is seldom done in the fall, it is well to roll the soil. This not only mokes the bed firm and smooth, but also enables one to see just where the surface is, and to set the plants at the proper depth. In planting a small bed my plan is to stretch the line where the row is to be and spat it down with the back of a spade. This gives a smooth surface with the impression of the line for a guide. If the soil be dry, I cover the surface around the plants with a mulch of some kind, and give one thorough watering. An excellent plan is to cut some grass when it is short and green, and scatter it all over the plants. This gives them shade just when they need it, and as the grass dries up they become strong enough to do without shade. If one is using potted plants it is a good way to have the beds prepared some days in advance, and the hole made for each plant. The holes may be filled several times with liquid manure which will soak into the soil and leave it in fine condition for the plants. In using layers it is a good plan to set them temporarily in loamy soil where they can be watered and shaded for a week. Then after a good watering they can be taken up with the soil adhering. These are as good as potted plants. If one wants potted plants without paying heavy express charges, he can accomplish it by buying layers and potting them as soon as received. They should then be placed where they can be watered and shaded as they need, until the roots reach the spot. Three-inch pots are large enough. If the roots are too long, they may be shortened. This method insures the plants against receiving any check in transplanting, which alone is enough to commend it. After plants are set they should be hoed so frequently that no crust can form on the surface, nor any weeds grow. It is a wise precaution to give fall-set plants winter protec-

tion. There is so much bare ground between them that they are liable to be heaved out. On sandy or gravely soil where the drainage is good, there is no danger. Even on clay soil, the danger is diminished by having good surface drainage, and the soil well firmed ; and also by setting the plants early enough so that they may become well established before freezing weather comes —M. CRAWFORD, Cuyahoga Falls, O.

TRANSPLANTING EVERGREENS.

I BELIEVE that autumn is a favorable time for transplanting Conifers. I may add that when the conditions are favorable, August is a better month than September, and the last half of July is quite as good as August, since nearly all Conifers finish their season's growth before the 4th of July. My first experiment in summer transplanting was made more than thirty years ago. At that time many writers were stating in the agricultural papers that June was the best month for transplanting evergreens, and even Henry Ward Beecher wrote an account of his success in transplanting at that time, although June is the worst month in the season, as Conifers are then making their most vigorous growth. We bedded out more than fifty thousand Pines, Firs and Spruces, beginning on the 5th of July and ending on the 25th of September, during which period we planted every day except Sundays. Each planter had a tin pan in which the trees stood in a puddle while he was making a trench. We placed a few branches with the leaves on around the beds so as to give the young trees a partial shade, but at the end of four days these branches were removed to the new plantings, and we found that the first plantings were throwing out new roots. Of all the trees transplanted we did not lose five per cent., except of the Pines, which were transplanted in September, and not one of the Pines which were planted after the middle of September survived the winter. Experience confirms what one would naturally suppose, that planting trees in full foliage late in autumn must be unsafe, for after the ground is cold, and the air is cold they will not throw out roots to supply the moisture which evaporates from the leaves. The trees we planted in July and August looked, on the following autumn, like trees which had been transplanted two years. We find little loss in transplanting Conifers of medium size in summer or early autumn, but our experience teaches that it is not advisable to ship Conifers when there is danger of hot or drying weather, with the chances of delay in transit and neglect at their destination.

I am satisfied by long experience that the safest period for transplanting Conifers is that from the time when the ground is settled in spring until the tree begins to make new growth.—ROBERT DOUGLAS, Waukegan, Ill.

COLD STORAGE FOR FRUITS.

IN fruit growing, as in everything else, writes Judge Sitzel in the Philadelphia *Ledger*, no one can expect to succeed who does not take an interest in his business. The future of fruit growing in this country is undoubtedly bright, and while there may not be a fortune for everybody, there is pleasure, at least, for all who embark in the pursuit. One of the most important adjuncts in the raising of fruits is the cold-storage house, by means of which fruit can be kept and put on the market when it will command the best prices. The selling period can also be prolonged. On any well-managed fruit farm the cost of such a plant will soon be made from the profit. I have inspected houses that cost from $300 to $7,000, and as a rule the small houses are not a success. Some years ago I had drawings prepared for one that cost $100, and the other $7,000. The larger had a capacity of about 3,000 barrels. Of this, the outside dimension was 40 x 55 feet; the outer wall two feet deep and lined with cement. Next to this was an air space of seven inches, and inside of this a charcoal lining of four inches. The storing room was divided into six departments entered from the vestibule, through which entrance was made by the outside. These doors were always kept carefully closed to prevent a sudden change of air. Spouting was arranged between the joists to carry off the water from the melting ice. There was no ventilation in the storage-room, except what was admitted through the entrance doors. The ice chambers had two large ventilators in the roof. The ice was covered with corn fooder, or similar substance, for protection. In the construction of fruit houses it is essential to build them strong. I have found that unripe berries can be preserved in their natural state a long time in jars filled with dry sand and sawdust, and placed in the ground at a depth that would give an equal temperature. An evenly cold temperature is a reliable preventive of decay in fruit and to this is due the success of the fruit house. If pears are properly handled and put in the fruit house until the market is bare of those varieties, twice the money can be made. The same with vegetable aud stone fruit. The temperature of a well-constructed fruit house and can be kept between 32 degrees and 40 degrees.

What is true of cold storage of fruits may be said about cold storage for vegetable, and milk products, as well as fresh meats. We believe that if the farmers, of a township for instance, would unite in building a farmers' cold-storage house, wherein butter and fresh meats could be stored, that it would prove such a success that the system would immediately become popular throughout the entire country. By this system, there would be no need of rushing butter or vegetables upon the market when there was a glut, but they could be held in cold storage until such a time when they could be sold to the best advantage.—Prairie Farmer.

EXPERIMENTAL FRUIT SHIPMENTS.

YEAR by year it becomes more evident that Ontario is able to produce a larger quantity of certain varieties of fruit than our markets are able to consume to the profit of the grower. Especially is this the case with the grape, which has recently been sold at a very low price in our markets. The profit upon grapes when at a cent a pound is very small, but unless some outlet opens, these low prices seem likely to rule in future for such productive varieties of ordinary quality as the Concord. Experimental shipments of grapes were made some years ago to Great Britain, by some Canadian fruit growers, but the result on that occasion was not very satisfactory, the net returns not averaging as good a price as could have been obtained at home. It would appear that the taste of the English consumers has been accustomed to grapes grown in hothouses or under the sunny skies of France or Spain, where a different class of grapes can be successfully grown from those which we ripen in Canada. On this account buyers hesitate to invest in such a distinct article from anything they have hitherto handled.

We believe, however, that could the British public learn to appreciate the refreshing and agreeable nature of our Canadian grapes, there would be a demand for all the grapes we could produce, providing we could place them in their markets in first-class condition without too great an expense. With this object in view, the Dominion government has been several times approached by representatives of the Fruit Growers' Association of Ontario, asking for legislation favorable to this end. Prof. John Craig, of the Central Experimental Farm, Ottawa, also before a committee of the House, spoke favorably of the advantages to Canadian fruit growers of opening up the British markets to our tender fruits.

Being somewhat encouraged, and hoping for success, the fruit growers of the Niagara district raised by subscription a sufficient amount of money to send a delegate, namely, Mr. E. D. Smith, of Winona, to place before the Dominion government the wishes of the growers. The Niagara District Fruit Growers' Stock Co. sent a delegate, namely, Mr. D. J. McKinnon, of Grimsby, and the Fruit Growers' Association of Ontario sent their president, Mr. M. Pettit, Winona. These delegates were received kindly, and they were assured of free cold storage on board certain steamers for a number of trial shipments of fruit, similar to that provided for butter. A grant of $20,000 had been appropriated by the Dominion for the purpose of providing cold storage accommodation for butter, but the Minister of Agriculture promised that he will prepare compartments of the same kind for fruits, in order to make the experiments satisfactory.

The important thing now will be for Canadian growers to select some fine shipments of first-class fruit and see that they are consigned to some reliable

agent in Liverpool, who will place them in a proper manner before the English salesmen. It is hoped that such fruits as tomatoes, pears, peaches, early apples, and grapes can be exported with profit.

In view of the great importance of having the fruit properly placed on arrival in Liverpool, in order that proper sales and reliable reports may be quickly had for the future guidance of Ontario fruit growers, the Secretary wrote the Hon. John Dryden to ask if the province would assist in thus opening up a market for Ontario's tender fruits.

The Minister of Agriculture replied he was ready to aid us in our enterprise, and that in the meantime, the Ontario agent in Liverpool would be instructed to be in readness to act in the direct interest of the Ontario fruit growers.

The question now is, when will cold storage apartments on shipboard be in readiness for the trial shipments?

MARKET GARDEN AND IRRIGATION.

My farm lies on the banks of the Little Arkansas river and from this river I get my water. I purchased a two-horse power gasoline engine and centrifugal pump and am irrigating 70 acres of my 240. I raise the water about 20 feet. My pump has a capacity of 600 gallons per minute. Gasoline costs about $1 per day.

The water is thrown directly into the main ditches, which run along the north side of my ground. These ditches have small boxes every 50 feet provided with slides. Through the boxes the water is let into the main laterals. Smaller laterals are made with a single shovel plow. After the ditches have been made two men can take care of and distribute the water. So far I have had excellent success, but my experience is too limited to make any very definite statements.

This season I have planted 30 acres of corn, 20 of Irish potatoes, two of onions, one of a fancy variety of oats, one of beans, one of cabbage, two of tomatoes, one of mangels, 1½ acres is a bearing vineyard, and the remainder is in various vegetables. I have watered the land once this spring. The water was run between every other row except with onions; the onion rows were only 15 inches apart so the application was made between every ninth row. Everything which has been irrigated is much more thrifty and a great deal farther advanced than crops not so treated.

Next fall I will lay off the land a little differently. The ground slopes gently from north to south. The main ditch will be run along the north border. Then every 50 feet a main lateral will be run to the south line, thus dividing the area into small fields. These plats will then be watered in succession. This I believe to be a cheaper and better method than the one I am now practicing.—American Agriculturist.

WATERING THE GARDEN BY MEANS OF A WINDMILL.

Usually a garden is irrigated by running the water between every other, or every third, row. This necessitates long rows, or the water will reach the end before the ground is thoroughly wet. To obviate this trouble, C. D. Perry, a successful farmer, writes in a western agricultural report that his garden last year was made as shown in the accompanying illustration and described below. "Selecting a piece of ground 25x150 feet, I ascertained with a level the way the level lines ran. It was of no consequence which way the beds lay, or what were their shapes, I made them wide enough for two rows of vegetables, with sunken paths between. The path ran around one end of the first bed and then around the opposite end of the second, and so on until the entire plot was laid out. Now, when a stream of water two or three inches deep is turned into the path at the highest point of the garden, it will follow the path to the end of the first bed, go round it and down the next path, etc. Three inches of head and the slight fall the water gets going around the ends of the beds will carry it back and forth to the bottom of the garden, where, perhaps, the last bed is two or three feet lower than the first. By this time each bed is wet from side to side. An eight-foot windmill, with a small pond or a wooden tank holding 120 barrels, will enable every family to raise more vegetables and small fruits than it needs."

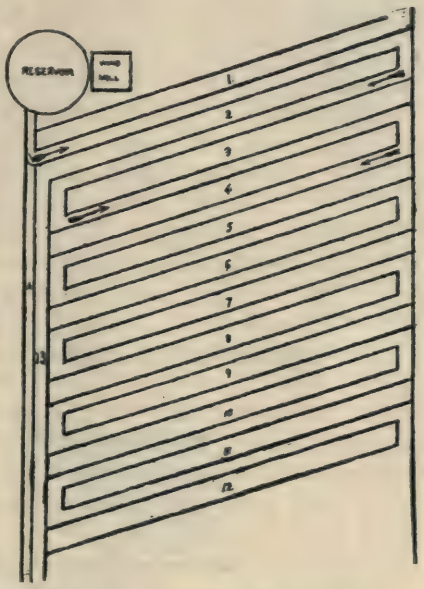

FIG. 816.—PLAN FOR IRRIGATING

Summer Pruning.—Intelligent horticulturists have almost given up trying to educate the public to put away the hatchet, saw, shears, and to a great extent the pruning knife, and do all with the finger and thumb in May and June. In the old world this knowledge is more diffused. Writing of orange culture in Italy one of our consuls says that there the object aimed at in pruning is to bring the greatest surface of the tree possible to the direct action of air and light. The spherical form is considered best. To keep this form shoots are pinched off in June each year. In the early spring weak and dead wood, and forgotten useless shoots, are cut out to let the light and air in among the branches; a sharp knife must be used.—Meehans' Monthly for July.

THE GROUND CHERRY.

WITH many farmers the ground cherry is classed among the weeds, as it grows wild in many parts of the central and western states. Its value as a fruit has not been generally appreciated, and until the past few years it was seldom seen in cultivation. An improved variety is now finding its way in our seedsmen's catalogues, and there is no doubt that it will grow rapidly in favor. With me the improved ground cherry has proven itself worthy of a place in the garden. The plant is quite hardy, and will thrive on any soil where potatoes will grow. The fruit when the husk has been removed, is a handsome yellow cherry of about three-fourths of an inch in diameter. It has something of a strawberry flavor, and is excellent for sauce, pies, or preserves. For winter use the fruit may be canned or dried. Or if kept in a cool place in its husk, the cherry will keep plump and sound until December, or later.

In growing ground cherries the same method is pursued as in growing

FIG. 817.—IMPROVED GROUND CHERRY.

tomatoes. The seeds are sown in hotbeds, and the young plants are not taken to the garden until danger of frost is past. The plants are very branching, most of the branches taking a lateral direction, almost touching the ground. For this reason they should be set not less than four feet apart each way. There is need of extra care in keeping down the weeds during the first half of the season, for later on the plants are in the way of such work. The ground cherry is wonderfully prolific. The first ripe ones are gathered about the first of August. After this the fruit may be picked every two or three days until cut off by frost. The fruit drops off as soon as it is ripe, so the most of the picking is done from the ground. On good soil one may expect to get a bushel from 18 or 20 plants, or from 130 to 150 bushels per acre.—American Agriculturist.

PACKING PEACHES.

PEACHES for market should be picked as soon as colored and before getting soft. The best pickers are young active men from 15 to 25 years of age. The best package for picking is a half bushel splint basket with strong handles, of which a sufficient number should be kept on hand, so that fruit (need not be emptied in the orchard, whereby they are much bruised) may be transported to grading room in same baskets.

Pick carefully the ripest fruit only, and go over the orchard about three times, because peaches ripen irregularly, those in the sun first, those in the shade last. If peaches are picked green or too ripe, they will not be first-class fruit, and a loss will be the consequence. Decayed fruit should be dropped to the ground, and all packages for market should be kept clean from leaves and branches. As soon as picked, transport into grading house, and make it a rule to gather, grade and ship on the same day. Grade properly into at least four different grades. We give the following table with the view of establishing a grading schedule, which will be used uniformly by shippers and merchants.

XX	grade.....	Size above	2	in.	diameter.
X	"	"	2	in.	"
A	"	"	1¾	in.	"
B	"	"	1½	in.	"

All fruit below the C grade will be culls.

The grading must be done carefully by experienced persons. The best package for shipping is a full peck splint grape basket, which should be filled well above the rim to allow for the settling of the fruit. Mark the grade on top. Transport to destination on spring wagon with platform extending over the wheels, and with cover over fruit securely tied down to protect from dust and rain.—North Amer. Horticulturist.

CACTUS NOTES.

N these rough notes on Cacti, we have confined ourselves almost entirely to our own experience, thinking that the results of our successes or failures would be a better guide to other Canadian amateurs than the more scholarly treatises of specialists, but we make an exception here, the description of the class Mammillaria in Lewis Castle's book on Cactaceous Plants is so plain, full and accurate, that we make no apology for copying it entire: "It would be very difficult to find any plant in the whole vegetable kingdom which presents such beautiful examples of symmetry as the Mammillarias, and in their own family they are unique in this respect, for though many of the grotesque Opuntias, Cereuses, and Echinocacti possess larger and more brilliant flowers, and they are surpassed in horticultural value by the Phyllocacti and Epiphyllums, yet for delicacy of design they are unrivalled. A large number of these resemble exquisite pieces of mechanism finished with the greatest minuteness and accuracy, others, again, might be imagined to have undergone a kind of crystallisation, their whole surface being frosted over with star-like spiculæ, arranged with geometrical precision, and others appear as if covered with the finest gossamer. Strangely beautiful indeed are most of the Mammillarias, and in contrast with their neat rosettes or stars of spines, are the rosy yellow and white flowers, which are generally followed by small, berry-like, coral-colored fruits, that, dotted amongst the spines, add another phase to the attraction of these plants. With so much to recommend them, it is not surprising that they have become great favorites with cultivators of cacti, and with that portion of the public who have obtained any knowledge of them."

Their cultivation is similar to the other round classes: porous soil, containing some lime rubbish, and only sufficient soil to hold their roots properly, the rest being drainage; full exposure to sunlight; water sufficient in early summer, scarcely any in winter.

The Opuntia, commonly known as Indian Fig, has about one hundred and fifty varieties; they generally have peculiarly oval flattened branches, armed with abundant spines, very easily cultivated, rapid growers and bloomers, they have of late become much more popular, their greatest drawback being their sharp, delicate spines; the spines of most of the other classes may pierce the skin but leave nothing behind, but it is almost impossible to touch an Opuntia with the bare hands without receiving some of the fine hair-like spines that stay and sting, in other respects no plant can be more satisfactory, hardy, free-blooming, responding well to proper treatment, they will stand a good deal of neglect, in the southern parts of this Province about Ridgetown and Blenheim,

the common varieties live out of doors all the year and bloom profusely in summer.

Diseases of cacti are few, rot is about the only one, and is always caused by extreme cold, or over-watering. Cut away all decayed parts at once, and dust with powdered charcoal and keep dry, though the shape of the plant will be ruined, you are likely to get off-shoots from the sound part. The only insect that is really troublesome is the mealy bug; for this, various insecticides are used; kerosene emulsion is effective, leave on for an hour or two, then wash with clean water, but the writer has found nothing so clean, cheap and thorough as alcohol, especially with a drop or two of fir tree oil added. With an atomizer, to be had at any druggist's, you can reach every part with a fine spray that dries

FIG. 818.

at once, nothing is wasted, but it is certain death to the insects, and no washing is necessary. Should a plant have been neglected, they may have got down to the roots, remove the plant and wash the roots thoroughly, when dry, repot; look over your plants regularly in winter, and never allow the insects to get a start.

Those, if any, who have followed these rambling remarks, hurriedly written owing to the pressure of other work, may think the instructions elaborate, and requirements many and difficult to provide, but the reverse is the case, cacti

require no coddling, get them rightly started and largely let them alone, if healthy, don't repot often ; you will be surprised how much neglect they will bear, but treat them properly and they will amply repay you, though you may not understand their "speechless eloquence," you cannot avoid observing their plump, shining bodies smiling their thanks for your care, and vieing with each other how best to reward you with flowers of satiny sheen in all the colors of the rainbow—flowers in your home such as have entranced travellers in Mexico or Brazil. Readers of the HORTICULTURIST, try them, subscribe for the "Baltimore Cactus Journal," only fifty cents a year, not gotten up to make money, but by a few cactus fanciers to increase the love for, and knowledge of, these curious plants. The articles are thoroughly practical, the answers to enquiries, yours and other beginners like yourself, are just the information you need. There are few families without at least one plant or flower lover. Parents, encourage your children in this, it is a pure and elevating taste ; get them some cacti, the interest in one plant or flower soon extends to others, they will make their home brighter and more attractive to themselves and all their friends, and you will soon be ready to admit that there are few things productive of as much pleasure as being a

CACTUS CRANK.

Gladiolus.—A few years ago there was a great wave of popularity in favo of the cultivation of the gladiolus ; but during the past few years, there seems to have been a falling off, judging from the reported sales by those who deal in flower roots ; but there seems no reason why this should be. Possibly there may be objection to the fact that the ground occupied by this plant seems so bare of plants until the gladiolus itself opens in late summer. But this can be remedied by planting something else with them, so that when the latter dies away, the gladiolus can succeed them. For this reason, they are often planted with tulips, hyacinths and other spring-flowering bulbs. The gladiolus soon follows into bloom after the other plants decay. A friend of ours plants them in the spaces between rhododendrons, and they add very much to the rhododendron garden, by blooming after the other flowers fade. The bulbs can easily be taken up and preserved through the winter.—Meehans' Monthly for June.

The chief beauty of the garden should lie in its flower colors and plant forms, and not in the symmetry of its beds and borders. If our ideas of a perfect garden include any rigid geometrical principles, we would better study nature and let our ideals go ! Our ideals, at best, are extremely limited, while nature's realism is immeasurable ; she puts so much variety into her reality that she is more beautiful than we can imagine, by sheer force of quantity ! . . . We should seek to display the whiteness and purity of the lily in the garden, and not trouble ourselves so much about the brown earth patch from which it grows.—SCHUYLER MATHEWS.

FUCHSIAS IN SUMMER.

FUCHSIA in perfection is always attractive, yet really good specimens are comparatively rare. No stunted, starved fuchsia will ever give satisfaction, and unless the plant is given rich soil, sufficient moisture and partial sunshine, it would not pay to grow it.

To those, who have seen noble specimens growing as high as eight feet, and loaded with handsome foliage and flowers, says our correspondent, W. F. Lake, in Country Gentlemen, no word is needed to convince them that they are worth the extra care necessary to attain this size, being far superior to smaller plants. In growing these large specimens, cuttings, which should be rather short shoots, may be taken off at the end of August or early in September, and as soon as they have formed roots, should be potted at first in pots not over three inches in diameter, placing them in rather a warm position for a time. When the plants have nearly filled the pots with roots, shift, using the next size larger. The main cause of "scrubby" fuchsias, is allowing them to become pot-bound in the early period of their growth, and at no time, until bloom is desired should the roots be allowed to become pot-bound.

As summer bedding plants in a shady location, fuchsias possess strong merits. If the soil be light and rich they will make surprisingly vigorous growth, and, as in the case of all bedding plants, the foliage and flowers will be decidedly improved in color and substance.

Care should be take that the plants are not exposed to strong winds, as the fragile flowers are easily injured and the buds knocked off, or whipped about so they will be ragged or torn, if those left are open.

Watering in the dry seasons should not be overlooked, and should be applied in a thorough manner, soaking ground clear to bottom of roots.

A very interesting sort is F. *fulgens*, which is a bulbous variety, dies down in the fall, and has a tuber which may be wintered as we keep gladioli and dahlias. The flowers are produced in panicles and are very slender, and from one to four inches long. This variety is started early in pots, and afterwards set in open ground, comes into bloom at a time when there is usually a scarcity of flowers in the garden, and never fails to attract attention from its peculiar shape of flowers.

Considerable interest may be derived in growing the fuchsia from seed, and watching the different characteristics of the plant as they come into flower, and in fact, during the whole period of their growth. Very good varieties may be secured from seeds taken from the fruitlike balls on your own plants, which will follow if the flowers are not picked off, the seed being found inside the reddish-

purple fruit. This should be sown in boxes in heat and the seedlings pricked into thumb-pots, after they have formed the second pair of leaves. If kept growing, will usually flower the first season.

When fuchsias are forced for winter they seldom amount to anything the following summer, unless taken from the pots after they have finished, all the soil shaken off and replaced again in smaller pots in a rich soil and watered sparingly until well started again. Treated in this way, they will usually flower again in late summer or early fall, sometimes continuing up till winter very profusely.

INTRODUCTION OF THE BERMUDA LILY.

HO can measure the pleasure given by a beautiful flower? Who deserves more grateful remembrance than one who, through love alone, brings to our fair land the choicest growths of other countries to beautify and gladden our own good homes?

The fairest of lilies—the pure Easter flower—the Bermuda lily—was first brought to America from the Island of Bermuda, in 1876, by Mrs. Thomas P. Sargent, Assistant Purchasing Agent of the Pennsylvania Railroad.

When she was leaving the island, in the spring of that year, two friends residing there gave her a few of the lily bulbs. Upon her arrival at her home she presented some of them to Mr. Robert Crawford, a near-by florist, who about a year later, sold the increase to Mr. William Harris, of Philadelphia. He began growing the bulbs and offered them to the public, with the addition of his name, as the Lilium Harrisii.

Mrs. Sargent was an invalid for many years. Her home in the suburbs of Philadelphia, was a centre for all that is lovely in plant growth, and her life was as beautiful and benificent as the choice flowers with which she surrounded herself. For her loving devotion to their culture, the bountiful giving of her treasures to hospitals, flower-missions, the sick, and hosts of friends, her name should be canonized among the saints in flowers. She is now where lilies bloom as the emblem of purity. No more fitting resemblance could be chosen to keep alive her memory than in giving her name to the first flower of her adoption.—Vick's Magazine.

The Caladium as an Out-door Plant.—The beautiful caladiums with variously-colored variegated leaves, which made such a beautiful show at the Columbian Exposition, are usually regarded as solely green-house plants, and to require a very moist atmosphere at that; but they are very successful when grown in the open air, providing the soil is damp and the situation somewhat shaded from the full sun. Indeed, when the proper situation can be secured, there are few plants which will give more pleasure under open-air culture.—Meehans' Monthly for June.

FLORAL DECORATIONS FOR THE TABLE.

BUT the form of decoration which demands the most taste and care is undoubtedly the adornment of the house, and specially of the dinner-table; a task which not unfrequently falls to the gardener's lot.

I have seen very beautiful table decorations which had involved but little outlay and no great profusion of flowers; while others, on which neither expense nor blossoms had been spared, were either stiff or insignificant.

White Van Throl tulips look exquisite arranged with their own leaves in small silver bowls, or in low vases of white china, especially if the table-centre be of soft silk, white, pale green, or salmon pink. Scarlet ones might be placed in rustic baskets on a ground of pale blue or cream colour.

Or again, a rather large vase of Venetian glass in the centre, filled with gold and bronze chrysanthemums loosely arranged, with fronds of some trailing form falling over the table. The other day I saw a table entirely decorated with enormous blossoms of that loveliest of Japanese Bouquet des Dames, each flower cut off short and stuck bolt upright, without a vestige of greenery in a specimen glass. One could not help thinking how much better their beauty would have been displayed had they been massed in three handsome vases down the middle of the table, and supplemented by little ferns in dainty china pots.

An ideal table in honor of a bride could be decked with cœlogyne or lily of the valley. The former should be arranged in shallow glass troughs, and if some leaves and bulbs of the plant can be spared, the flowers will look doubly well, whilst a too flat effect can be avoided by the introduction of some Liliputian palms. Wide bowls filled with Roman hyacinths or lily of the valley, interspersed with tall slender glasses, each containing a few sprays of the same, look very lovely; and crocuses grown in shallow tins covered with moss, are bright and pleasing.—The Gardener's Chronicle.

Something About the Baldwin Apple.—What the Bartlett is among pears, and the Concord among grapes, says the Rural, the Baldwin is among apples—especially in the North. In the South and South-west it does not succeed so well. It is now proposed to have a monument erected to its memory, at or near the place where it was first discovered, only a few miles out of Boston. The inscription on the shaft will recite that near its site "in 1793, Samuel Thompson, Esq., ... discovered the first Pecker apple, later named the Baldwin." Many trees were grafted with cions from this tree, and it became well known locally. Through the influence of Col. Loami Baldwin, a celebrated engineer, it gained a wide reputation, and was afterward known by his name. It is a better monument to his memory than many a shaft of granite, or statue of bronze to more widely-known, but, perhaps, to less-deserving men.

FORCING LETTUCE IN POTS.

THE following description of a method of forciug lettuce in pots that has been followed at the New York Agricultural Experiment Station, may be of interest to those who grow lettuce under glass, either in an amateur way or as a commercial product.

The seed is sown in flats as usual, that is to say in boxes about twelve by ten inches and three inches deep. When the plants are about two inches high they are transplanted to two-inch pots. The benches are filled with soil, in which the pots containing the lettuce are plunged so that the top of the pots are covered with about half an inch of soil.

Preparation of Soil.

Soil for lettuce should not be too heavy, and as the soil which we use for potting is a rather heavy clay loam, sand is mixed with it in preparing it for the lettuce house. The potting is composed of three parts by measure of loam, one of manure and one of sand.

The benches are six inches deep; the lower three inches being filled with well-rotted manure, and see upper three inches with potting soil prepared as described above.

FIG. 819.—LETTUCE PLANT GROWN IN A TWO-INCH POT.

The soil in the pots is the same as that used on the bench, except that it is sifted while that on the bench is not. A little drainage material is put in the bottom of each pot. The plants are usually set on the benches about ten inches apart each way. The roots soon fill the pot and grow out into the soil of the bench through the drainage hole in the bottom of the pot. Being thus buried in the soil, the little pots do not dry out as rapidly as they would do were they exposed to the air.

The soil in the pots is sufficient to support a vigorous growth, and yet when the roots have filled the pots the plants appear to make a more compact growth and head quicker than they do when grown in beds where the extension of the root system is unchecked.

Another advantage of this method consists in the fact that the plants are transplanted but once, namely, from the flats to the pots, thus the check to the growth by a second transplanting is avoided.

Marketing.

The plants may be marketed without disturbing their roots, and for this reason they keep fresh for a longer time than do the plants whose roots are disturbed in preparing them for market. See Plate I. When the plant is ready for market it may be knocked out of the pot, and the ball of earth containing the roots undisturbed may be wrapped snugly in oiled paper. The earth will thus keep moist for a long time, and furnish moisture to the plant through the roots which are imbedded in it. Local customers may be supplied with lettuce in the pots and the pots returned after the plants are taken from them.

Grocers and other retail dealers readily appreciate the advantages of having lettuce grown in this way. It permits them to keep the lettuce on hand for a considerable length of time, and still present it to their customers crisp, fresh and attractive, instead of wilted and unattractive.

The moment a pot is removed from the bench, another may immediately be set in its place without waiting to clear the bench, or any portion of it, of the rest of the lettuce. The method thus proves economical both of time and space.

This method will undoubtedly commend itself to growers who are forcing lettuce to a limited extent. Whether it can be employed to advantage by those who have extensive houses devoted to lettuce can be decided only by trial. It certainly appears to be worthy of extended trial.

Varieties.

The variety of lettuce selected for forcing must, in general, be determined by the market demand, and it should be the aim of the grower to furnish what his market calls for, rather than what he may think he ought to have.

Summary.

The growing of lettuce in pots is believed to have several advantages over growing it in benches, namely :

1. By inducing a compact growth and favoring early heading.

2. The plants are transplanted but once, that is from the flats to the pots, so that the growth is not checked by a second transplanting.

3. Plants may be marketed without disturbing their roots, and so may be kept perfectly fresh for a long time, an advantage that is much appreciated by retail dealers.

4. As soon as a plant is removed from the bench its place may be immediately filled with another potted plant, so that the entire bench room may be kept constantly occupied.

The method may be briefly outlined as follows :

The bench, six inches deep, is half filled with well-rotted manure, over which is spread three inches of soil.

The soil is made of one part by measure of manure to three parts of rotted sod. Should the sod be from a heavy loam it is made lighter by adding one part by measure of sand to three parts of sod.

As to the care of lettuce under glass it may be said that :

The house should be kept at a cool even temperature, running a few degrees above fifty in the day, and remaining at fifty or a little below at night.

Sudden fluctuations from high to low temperature or vice versa should be avoided.

The plants should have plenty of fresh air, especially on sunny days when the temperature is high outside.

When the plants are watered overhead it is best to select a time when the foliage will dry quickly. Avoid watering so late in the day that the plants will not dry before night.

The following varieties have forced well at this Station :

Cabbage lettuce :—Big Boston, large ; Salamander ; Drumhead ; Henderson's New York, curled ; Golden Ball, dwarf ; Golden Queen, dwarf.

Varieties forming loose heads :—Grand Rapids, curled ; Hanson, curled ; New Iceberg, curled ; Prize Head, curled, tinged with reddish brown.

I suppose that everyone feels that the greatest charm of any landscape in the north is the greensward. It is the canvas upon which every artist-painter attempts to make a picture. But imagine a painter putting a glowing bed of coleuses on his canvas, for a centre-piece ! The fact is, the easiest way to spoil a good lawn is to put a flower-bed in it ; and the most effective way in which to show off flowers to the least advantage is to plant them in a bed in the greensward. Lawns should be large, free and generous, but the more they are cut up and worried with trivial effects the smaller and meaner they look.—BAILEY.

TOMATO CULTURE.

CHAPTER XIV.

PICKING AND MARKETING TOMATOES.

The gathering of the fruit is a matter of no small importance. The best of fruit is easily damaged by careless hands, handling them in a careless manner. In picking and cleaning, the less the fruit is handled the better. If the tomatoes are to be sold wholesale at a canning factory, the cheapest way is to hire them picked by the bushel. A little cracking or bruising makes but little difference when they are to be used at once. By hiring them picked by the bushel, and drawing them directly to the factory without sorting or cleaning, they can be sold considerably cheaper than when they are prepared for the general market. For market and shipping purposes, my experience is that it is most satisfactory to hire the picking done by the day or week, for the simple reason that, if let to pick by the bushel, it is almost impossible to get them picked with care. Boys from 14 to 18 years of age are good helps, but to have the work done right it is best to hire a good man and place two boys under his control, giving the boys to understand that they are to work under his direction, and giving the man to understand that he will be expected to see that the boys under his guidance are faithful and do their work properly. The trio should take three rows, with the man on the centre row. An active boy should be able to pick about as fast as a man ; but if they fall behind the man should help them up, and so keep them under his eye and control all the time. The owner, however, should see that the boys are not imposed upon, or made to wheel or carry burdens too heavy for their strength.

The tomatoes should be picked and laid carefully into the picking boxes. They should never be thrown or tossed carelessly. They should then be wheeled immediately into the market shed, then be wiped clean and laid into the market boxes, or, if to be shipped, into the shipping boxes. Lay them in with the stem end down ; laid in thus they carry better, and look better than if pitched in any way. Any that are cracked, bruised, or very rough, should be sorted out and sold as culls at half price, for making catsup. If they cannot be sold, feed them to pigs ; they will fatten pigs much faster than potatoes. They are also valuable for feeding milch cows. When putting them up for market, have a pair of scales at hand ; take the weight of the empty box, then add 28 pounds for the tomatoes and you will have half a bushel.

CHAPTER XV.

SHIPPING TOMATOES.

If the tomatoes are to be shipped, use the same boxes that are used for picking, put 25 pounds in each box and wire down the covers, and they are ready to ship. If baskets are used, the best size is 12 quarts, with hoop cover and Leno netting, to show the fruit. They should be made of elm, and well nailed; they will then carry 20 pounds. I have always found it best to put up tomatoes for shipping by weight. If they are put up in 20 or 25 pound lots, it is easy to make the even hundred pounds, and as the railroads charge by the hundred pounds for carriage, the charge on them will be less than when they are put up in various weights. My practice for expressing is to send a careful man directly to the station with the fruit, and at the same time send with the man a memorandum, with name and full address of the parties to whom the goods are shipped, also the number of packages and weight of each man's goods. The memorandum is handed to the express agent in time to have all booked. The man is instructed to watch the goods until the train arrives, and then to assist the agent to put all carefully into the car. By this means I am sure that all goods leave in first-class order.

CHAPTER XVI.

VARIETIES OF TOMATOES.

Acme—This tomato has become quite popular in some sections. It seems to be best suited to the sandy soils. It is often catalogued as Early Acme, but as far as my experience goes, it should be classed as a late variety. Color, purplish-crimson; medium size, good bearer, very smooth and handsome. Grows too much vine for very rich soils or mucky land. With me, it cracks too much for market purposes, and is subject to dry rot on the face of the fruit.

Dwarf Champion—This is a very distinct variety, recently introduced. Of dwarf, stiff habit; color, purplish-crimson; medium early and very smooth; quality, first-class; ripens evenly all over; does not crack as much as other very round varieties do. It is well adapted for small gardens and rich soil. First set fruit good size, afterward too small for market purposes. It can be set one-third closer than most varieties. With me, it does not yield much more than half the crop of some other sorts.

Canada Victor—This tomato originated with me twenty-five years ago. I sold the first seed of it to a noted seed merchant in the United States. I sent him a little of the seed for trial, and it was so much ahead of other sorts tested

with it in earliness and productiveness, that he paid me two hundred dollars for one-fourth pound of the seed. It soon became very popular, both in America and Europe. It will yield and ripen fruit better than any other variety I know of on heavy soils, where other varieties often fail. The fruit is of good size, grown in large clusters; not all smooth, but usually growing such a large crop that if all the irregular ones are thrown out there will be as many smooth ones left as most varieties yield. Color, deep red; smooth, oval shape; ripens very evenly and does not crack, and is very early. It is well adapted for forcing in frames.

Mikado—Very large and quite early. Color, same as Acme; does not ripen evenly; and with me grows too rough to be recommended for market.

Livingston's Favorite—This I think is the best of all the Livingston varieties, meeting more fully the requirements of a market variety, than most sorts. Medium early. Size above the average and holds its size well throughout the season. Mostly smooth, ripens evenly and is not subject to rot. It is very productive and a good deep red color.

Lorrillard—This tomato has been sent out as being well adapted for forcing. With me I have not found it as good for forcing as some other varieties. But I have found it one of the best late varieties I have ever tried. It is very large, very smooth and very solid, and a fine red color. Does not crack. Keeps well and is very productive. Its only drawback is that it is rather late. If it had been as early as some sorts I should have pronounced it the best tomato yet introduced.

Ignotum—This tomato is of large size and good quality. Good red color and ripens evenly. But on my soil it is quite late and does not produce a full crop. I have tried it two seasons, and with me it did not ripen more than half the crop that some other sorts did.

Mitchell's New Tomato—This new variety first sent out by me in small packets to the members of Ontario Fruit Growers' Association for trial. The report for season of 1889 from all parts of the Dominion being *very favorable* led me to sell the seed of it and also place it in the hands of some of our leading seedsmen for sale. It is of large size, averaging ten ounces each; quite a few of them will grow to weigh a pound each. It is smooth and even in shape and a fine red color. It holds its size well until the end of the season. It is the earliest large smooth variety and excellent for forcing. During the past four seasons I have grown it extensively and it has not failed every season to ripen one-third more fruit than any other sort I have tried. It does not crack and is an excellent shipper.

Vaughn's Earliest of All—Very early, probably the earliest tomato grown. It is red in color and quite productive, but it is small at first ripening, and very small after the first few pickings, besides being quite rough, so that I cannot recommend it for market purposes.

Livingston's Beauty—A nice tomato, round, smooth and of a bright crimson color, tinged with purple. It is solid and does not rot readily, a good tomato, but with me rather late and not productive enough for market.

New Peach Tomato—There are two varieties of the peach tomato, one rose color and the other lemon-yellow. They are round and about the size of a peach, very uniform in size and appearance. Fine flavor and nice to eat from the hand. Good for preserving. Medium early.

Atlantic Prize—This is one of the earliest of tomatoes and a good bearer. The first season I grew it it did remarkably well with me, yielding a large crop quite early, and I was much pleased with it, although some of the fruit was rather rough. The past two seasons it has cracked so badly that it has been unprofitable; on some soils it may prove profitable.

Early Ruby—This tomato so closely resembles the Atlantic Prize with me that I think they are closely allied, if not identical. It is early and productive but somewhat rough and cracks badly.

Brandy Wine—This new tomato, introduced by Johnson & Stakes, has been grown by me for three seasons with satisfaction. It is medium early, not quite as productive as some sorts, but it is the largest really good tomato I have ever tried. I have grown perfectly ripened fruit of it that would weigh two pounds each. The fruit is somewhat flat at the stem and ripens evenly and does not crack. It is of a good red color and mostly smooth. A bushel of them can be gathered in half the time that it would take to gather a bushel of medium sized fruit. And the saving of time in harvest is a big boon to the market gardener.

The varieties described have all been tested by me, as well as many other sorts not described that I have tried and rejected. There are also, no doubt, many good sorts that I have tested that will prove valuable. I wish it to be distinctly understood that varieties that have not been a success with me may prove valuable in different locations, and on other soils. My advice to those who grow largely for market would be to test carefully new varieties in small quantities and grow those that are best adapted to your soil and location for main crop. As a rule, those that grow a strong vine of average length will be found best adapted for light sandy soils. And those that grow short vines for soils that are strong and heavy.

St. Mary's, Ont. S. H. MITCHELL.

ACKNOWLEDGMENT.—For the handsome sketch entitled "Summer," to be found at the end of this number, our thanks are due to Mr. George Brigden, of the Toronto Engraving Company. Mr. Brigden is rapidly pushing himself to the front among our local artists, and we wish him every success.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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Notes and Comments.

OUR GOOSEBERRY STATION.—On the 8th and 9th of July, Professor Hutt and the writer made a trip north into the County of Simcoe, for the purpose of visiting the gooseberry plantation of Mr. S. Spillett, of Nantyr, who has recently been appointed experimenter in that fruit. The whole country here is interesting, with Lake Simcoe in the distance, and the many hills and vales which give variety to the landscape.

Mr. Spillett has about two acres and a half devoted to his gooseberry experiments. The land is of the best character for the work in which Mr. Spillett is engaged, being mixed sandy loam and clay. He has enriched it to a remarkable degree and the size of the fruit is, in consequence, extraordinary. Mr. Spillett has some twenty varieties under test, and year by year will add to the number. He has been a public school teacher for many years, but is now retiring to devote himself more especially to experiments with fruit. We believe that the results of his experiments in gooseberries will be of great benefit to Canadian fruit growers.

APPLE INSPECTION.—It appears that the Tasmanians are more careful about the quality of their apples forwarded to Great Britain than we are. The Journal of the Council of Agriculture, published at Hobart, comes to our table regularly, and gives an instance of a man, a member of the Council, who brought to the wharf for shipment thirty cases of inferior grade apples The inspector at the wharf refused to pass these apples. The matter was afterward discussed in the Council, and the person who attempted to ship the inferior fruit took the ground he had a perfect right to ship whatever rubbish he liked to Britain, providing he paid for its carriage. The opinion prevailed in the Council that such shipments affected the prices obtained by other shippers, and, indeed, affected the reputation of Tasmanian apples. By vote of the Council, the name of the offending member was dropped from the membership roll of the Council.

Question Drawer.

Frosted Raspberry Stalks.

748. SIR,—Would it be a good plan to cut back the frozen raspberry stalks ; some canes are black, some have crisp heart, but the leaves are green. If cut half down, would they likely shoot out again and fruit later on ? A. J. COLLINS, *Listowel.*

Certainly it would be a good plan to cut off all injured portions of the raspberry plants, in order that the whole strength of the plant may be given to the healthy buds below. The result might be vigorous growth from them, and quite possibly a fair quantity of fruit.

Pruning Honey Locust Hedge.

749. SIR,—Having a triple row of Honey Locust to form a hedge—now in its third year—would like to know how and when to prune it. It is in front of a double tenement house, running from front to sidewalk as a walk between the two occupants. As it is perhaps too late to answer in the July number of the CANADIAN HORTICULTURIST, would you kindly answer by letter and oblige GEORGE S. WASON, *Hawkesbury.*

Reply by Mr. John Craig, of Ottawa.

It is somewhat difficult to give a correct method of treating a hedge about which so little is known regarding the conditions surrounding it. In the first place, it is, in my opinion, a mistake to plant double or triple rows of any variety of tree with the view of thus forming a permanent and long-lived hedge. It nearly always follows in such cases that the inside branches and those on the middle row of trees are so crowded, as to make only a very weak growth, and thus to be of little service in fulfilling the purposes for which they were planted, which may be ornament or utility. In the case of the double rows, the inside branches usually fail for the same reason, viz , on account of being deprived of light, so that only half of each tree is able to perform its function normally, and thus the growth is thrown largely to the outsides. In the case of this particular hedge, and supposing it to be in a fair growing condition, I would suggest that it be trimmed back in the autumn. If it has not already been trimmed, this would be the best treatment, as cutting it back now to the desired height would probably give it too great a check. The after-trimming would consist of pruning it next spring when the season's growth is about half completed, and again about three weeks later. In the Ottawa district the Honey Locust is not reliable as a hedge plant, although its beautiful fern-like foliage renders it an attractive plant for this purpose. Occasionally we find hardy individuals of this species, but as a rule they vary so much, that it is impossible to get a hedge-row without a number of gaps in it, caused by the killing out of a percentage of more or less tender plants. It is, in good soil, a very rapid grower, and on this account it is perhaps more expensive as a hedge plant than some other varieties of slower growth, which need less pruning.

Rose Mildew.

750. SIR,—I take the liberty to enclose herewith a few rose leaves. They are losing their color and curling up just as if it were from drouth, but I think the trouble is from some parasite ; if so, I shall esteem it a favor if you give me a cure. Please do not wait to reply through the HORTICURTURIST, as my bushes might be spoiled by the time the next number will be issued. General Jac. and others of my best roses seem most affected.

R. CUNNINGHAM, *Guelph*.

(Reply by Mr. John Craig, Ottawa)

Your letter of the 20th inst. is received, and with it samples of rose foliage affected with a fungous disease. I have examined these carefully, and believe the foliage to be affected with the common form of rose mildew, viz., *Sphærotheca pannosa*. This is a very troublesome disease ; especially in greenhouses, but there conditions are such that it can be controlled more completely than when the plants are grown out of doors. The principal remedy, and one which has been generally considered satisfactory, is to apply the fumes of sulphur ; but out-of doors this is impracticable, and I would, therefore, recommend either of the following fuugicides : Copper sulphate, quarter of an ounce to five gallons of water ; or ammonical copper carbonate, quarter of an ounce to five gallons of water. I would spray the plants immediately with either of these mixtures. You will probably be able to get the copper sulphate more readily than the ammoniocal copper carbonate. On account of the disease having such a foothold, three or four applications at intervals of five or six days will be necessary to arrest it.

⁂ Open Letters. ⁂

Best and Cheapest Way of Keeping Parsley Out-of-Doors During Winter.

(Answer to A. M. Wilcocks, of Richmond, Que.)

In the first place, it may be well to state that parsley is a biennial plant belonging to the botanical family of *Umhelliferæ*. It, therefore, takes two years to complete its life cycle. Ordinarily, or under favorable conditions, we would expect it to live over winter, and produce its seed the second year in the same way as the parsnip and carrot. In the colder portions of Canada, however, the plant is frequently killed during the first winter, and especially is this the case when the seed is sown upon light sandy soil, but if sown on good rich loam and in such a situation as is likely to be covered by early autumn snows, and also well protected throughout the winter, it is not usually winter killed. Therefore, in sheltered gardens little protection will be needed, as a rule, to carry it through the second year. Where protection is necessary. I would suggest mulching on either sides of the rows with forest leaves or straw after the ground has become stiffened by the first frost. A frame made of boards would be of assistance and use in holding the leaves or straw near the row, and preventing it from blowing away.

JOHN CRAIG, *Horticulturist*.

The Longevity Apple.

SIR,—The original tree of the Longevity apple is, I feel confident, a seedling, and the tree is about ten inches in circumference. The fruit in the fall is very firm and the background greenish, which, towards spring, takes on a rich yellow, well covered and splashed with red. The flesh is fine-grained, rich, juicy and somewhat tart. In general appearance it somewhat resembles the Ben Davis and also Cooper's Market. Mr. Hart says it is larger than the latter and not so pouty at the blossom end. Last fall I sent two barrels of this apple to Mr. Hart, telling him they would keep until June. He put them in a cool room. About the first of May, a gentleman came in, looking for two barrels of choice apples, and Mr. Hart showed him these, asking him $15 a barrel for them. He would not buy, but wished to see the apple, and when the barrels were opened the apples were found to be in perfect condition. About the first of June, Mr. Paul came in and saw the apples, and before he left offered Mr. Hart $25 a barrel for either one or two barrels, which was accepted and paid.

D. YOUNG, *Adolphustown, Ont.*

Kind Words.

The twelve monthly numbers of THE CANADIAN HORTICULTURIST, bound together, make a superb volume, fit to grace the hand of the daintiest reader or a shelf in the finest library in the land. This is the official publication of the Fruit Growers' Association of Ontario, and if all its works were on a par with THE HORTICULTURIST, none would venture to dispute its claims to wider recognition and all the aid the Government can afford. A more general circulation of literature of this description would be beneficial in many ways, for a keen interest in fruit-growing, floriculture and kindred topics would be aroused and only good could follow. There are nearly 448 pages in volume xvii, and many illustrations and beautiful colored plates of fruit. Mr. Woolverton is an enthusiastic and successful fruit-grower, and under his charge THE HORTICULTURIST has grown in its proportions and usefulness.—The Globe, Sat., June 8th, 1895.

Our Book Table.

CATALOGUES.

PRIZE LIST, CENTRAL CANADA EXHIBITION, Ottawa, September 20–28, 1895. E. McMahon, Secretary, 26 Sparks-st., Ottawa.

WESTERN FAIR PRIZE LIST, London, Ont., September 12–21, 1895. Thomas A, Brown, Secretary, London.

CALENDER OF QUEEN'S COLLEGE AND UNIVERSITY, Kingston, Ont., for the year 1895-'96. Chancellor, Sandford Fleming, C.E., C.M.G., LL.D.

PRICE LIST Central Exhibition, Guelph, Sept. 17, 18 and 19, 1895.

CANADA'S Great Fair and Industrial Exhibition, September 2 to 14, 1895. A credit to Toronto.

GOOSEBERRY PIE.

YOU may boast if you like of bacon and greens,
You may talk of roast turkey and game,
You may sing loud the praises of Boston baked beans,
They may all be just what they claim.
Roast beef and plum pudding may answer for some,
Or oysters in stew or in fry;
I relish them all; but my greatest delight
Is a big piece of gooseberry pie.

CHORUS.

For there is nothing like gooseberry pie, say I.
Oh, don't I like gooseberry pie?
Since the time of the flood there's been nothing so good
Or so luscious as gooseberry pie.

It was my favorite lunch when toddling around,
A youngster of three years or more,
And I snuffed up the fragrance that often arose
Through the crack of the old oven door.
But now I've grown older, I love it still more,
And shall till the day that I die;
And the one that would win my friendship must first
Fill me chuck-full of gooseberry pie.

As my teeth gently press through its lovely brown crust,
And the moisture it holds is set free,
How it strikes through my frame such a thrill of delight,
Oh, its luscious as luscious can be.
There's a girl here that's taken a fancy to me,
I can tell by the glance of her eye,
But the one that I marry must first understand
How to make a good gooseberry pie.

SUMMER
F.A. Brigden

HARVESTING THE RED ASTRACHAN.

THE

Canadian Horticulturist

VOL. XVIII. 1895. No. 8.

OUR ASTRACHAN HARVEST.

MORE than twenty years ago the writer planted an orchard of about one hundred and twenty-five trees of the Red Astrachan, a variety then but little grown in Canada. The Early Harvest was then the great summer apple of this Province, an apple of fine quality, but small in size, and gradually becoming subject to the ruinous apple scab. We have never regretted the venture, for since the Red Astrachan trees have come into bearing, the Early Harvest has taken quite a second place. Fortunately, however, the latter precedes the former by about a week, so there is room for both varieties.

The Astrachan is very productive. This season one large tree has yielded over ten barrels. Surely no one could wish for greater productiveness than this. Our frontispiece is a snap shot in our Astrachan orchard, showing a couple of trees laden down with richly colored apples, a couple of the pickers, and a wagon load of the fruit. Fig. 820 also shows a branch laden with apples taken from one of these trees.

We never throw down our apples in piles in the orchard, because it is inconvenient for packing, on account of the trouble of moving barrels and baskets, hammers and other tools, from place to place. Far the best plan we find this one to be of bringing all to the packing house in baskets, from time to time through the day, and there assorting in a careful manner. The packing table is an almost indispensable convenience. On this the packer dumps out the fruit,

which rolls down toward the opening. All apples which are well colored, well formed and of good size, are selected out and packed in new, twelve quart handle baskets. These are stamped choice fruit from ———, with xxx's to indicate the grade, while the No. 2 grade are run out into barrels. Fig. 823 gives us a view in the packing house, showing a number of baskets packed and ready for shipment, and some of the barrels of second grade fruit. The third grade is thrown out for feeding or for making cider.

FIG. 820—BOUGH OF ASTRACHAN, FROM PHOTOGRAPH.

One packer is needed for every two pickers, that is if careful grading is to be done, and the whole crop must be handled before the variety becomes over ripe and mealy. Our plan is to go over the trees once or twice a week gathering the apples just as they attain full color. In this way the harvesting of the crop may be made to extend over a period of about two weeks, or more.

This method of handling such fruit pays, because when a buyer purchases a package of extras and finds it turn out through and through to his satisfaction, he will come back again and buy more freely.

The plate of Astrachans given in Fig. 822, will give a correct idea of the form and beauty of the apple,

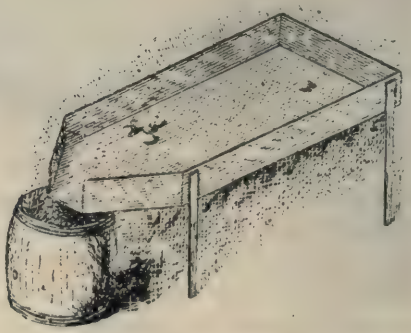


FIG. 821.—PACKING TABLE.

providing the reader can imagine the color of the skin to be a rich crimson. When thus highly colored, what apple could be prettier for the dessert table than the Astrachan, even though the quality is inferior to some other varieties.

This season this apple has sold well in Canadian markets, owing to the shortage caused by the late frosts.

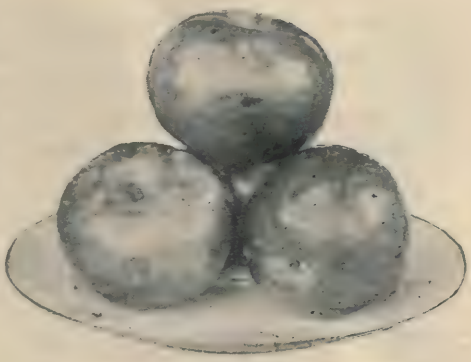


FIG. 822.—PLATE OF ASTRACHANS.

The basket used is a very neat one, with board ends, on which is stamped the name of the grower and the grade of the fruit. The quantity contained is about a peck and a half, and when only the most fancy fruit is thus packed, they will always sell. The ventilated barrel is used for ordinary grades of summer apples, and two or three of these are shown in the back ground in Fig. 823.

FIG. 823.—PACKAGES OF ASTRACHANS FOR SHIPMENT.

POSSIBILITIES OF GRAPES.

GRAPES CANNED WHOLE.—Heat cans very hot, fill them with stemmed grapes, cover with boiling water, seal and let stand ten minutes. Pour off the water, cover with thin boiling syrup and seal.

Grapes Canned Cold.—Boil water and hermetically seal till cold. Make ready a quantity of grapes cut from whole bunches in clusters of three or four. Let no grape be loosened from its stem, also remove all stems from which the fruit has fallen. Fill cans with these clusters, then cover to the brim with water immediately after the can containing it is opened; seal at once. Another method is to fill cans with grapes prepared in the same way, under water. Drop them in carefully till the grapes have displaced the water and filled the can, then screw on the cover under water. One or two clusters as large as will go in the can without bruising may be put up in this way, and look beautiful. The success of this method depends upon the certainty that no individual grape is loosened from its stem.

Ripe Grape Jelly.—Heat stemmed grapes slowly, breaking a small quantity to start the juice. Put a few at a time in cheesecloth and express the juice with lard squeezers if you have them. Quarter and core, but do not pare, juicy tart apples. Cook and press out the juice. Add one-third apple juice (or less) to the grape juice. If part apple juice is used grape jelly will not form crystals and there is no perceptible change in flavor. Boil two quarts only of this mixture at a time. Twenty minutes from the time it begins to boil add gradually eight teacupfuls of granulated sugar which was heating in a very hot oven while the juice was boiling. Boil five minutes, then pour into jelly cups set on a towel wrung from cold or warm water. Cover when cold with butter paper.

Grape Butter.—For nine pounds of grape pulp, after taking out the seeds and stems by pressing through a colander, use six pounds of sweet apples and three pounds of sugar. Steam the pared and cored apples till sufficiently soft to press easily through a colander, then cook with the grapes twenty minutes, add the sugar and boil fifteen minutes, or until of the consistency of fruit butters.

Pickled Grapes.—Fill a stone jar with alternate layers of white sugar and clusters of ripe, freshly-picked grapes, using sugar freely. Fill the jar one-third full of cold cider vinegar. As the grapes settle put on a plate and weight, but do not press sufficiently to bruise the grapes or loosen them from the stems. In a week or two add sweetened vinegar if necessary to cover. Keep tightly covered and let stand two months before using.

Grape Jam.—Stew the grapes until they are tender, then rub them through a colander. For every four teacupfuls of pulp use three teacupfuls of good brown sugar. Boil till when a little is poured on a plate, no moisture gathers about the edge and it looks dry and glistening. All jam and fruit butter must be stirred very often, as they scorch easily.

Grape Preserves.—Place the skins and pulp of grapes (after removing the seeds) in a kettle, and cook with a little water till tender, then add sugar pound for pound and keep just at scalding heat for fifteen minutes. If allowed to boil the skins will become tough. Seal hot in pint or quart cans. The kettle should be covered while the skins and pulp are cooking.

Grape Sauce.—Ripe, freshly gathered grapes make a very delicate table sauce by removing the skins and sprinkling the pulp liberally with powdered sugar.

Sacramental Wine.—Cook stemmed grapes with a very little water till the seeds separate. Press through a thick cloth, then for every ten pounds add three pounds of granulated sugar. Heat till it boils, bottle and seal. This quantity makes one gallon.

Grapes for long keeping should not be over-ripe. Let them lie in baskets undisturbed two or three days. Remove with a pair of scissors all green or imperfect grapes and any that are in the least loosened from the stems. Line the bottom and sides of paper and shallow wooden boxes with any paper except newspaper; put in loosely a layer of grapes, cover with paper, then a layer of grapes, till the box is full. Cover and keep in a moderately dry place till there is no danger of frost.

Most cellars are too damp to store grapes. If kept too dry the grapes will shrivel. Examine occasionally and remove all imperfect or decayed grapes. I have kept them in this way till April, placing them in a cold room and covering with blankets in freezing weather.—American Agriculturist.

Fruits in New York in early June.—Large and bright purple-black cherries, from California, cost at retail twenty-five cents a pound, while immense cherries known as Centennial, almost equal in size to the apricots now coming from that State, cost forty cents. This showy variety is a California seedling fruited for the first time in 1876. It is of an amber color, freely splashed with dark crimson. Its meaty flesh is remarkably sweet, and of excellent flavor, and while the fruit is juicy it has the good market qualities of keeping well, and of carrying in good order. The best of several small lots of cherries from North Carolina compare unfavorably with those from California, the highest price for these being twenty cents a pound. California peaches have already been seen here in small advance lots, a box containing eighty fruits selling for $4 at wholesale. Huckleberries from North Carolina are quite plentiful, and of fair quality for the time of the year; the best bring twenty-five cents a quart. A few native plums and some peaches came from Georgia last week, but were not sufficiently ripe to bring good prices. Musk melons are coming from Florida, but very few of them are of the best quality. Except occasional lots of Russets from the interior of New York State, no more apples are likely to arrive. The barrel stock on hand is being divided into baskets holding something more than half a bushel. Ben Davis is the latest red apple offered.—Garden and Forest.

PACKING AND SHIPPING FRUIT.

GRAPES should be picked carefully, and then allowed to stand three or four days to wilt before shipping. When packing, handle the bunches by the stem, and do not touch the grapes themselves, as that injures the bloom, which every care should be taken to preserve. All green, imperfect, or bruised fruit should be removed with the sharp pointed grape scissors. Lay the clusters in so as to fill the baskets just level; then weigh and mark the weight on the handle of each basket. A uniform weight should be maintained for similar sized baskets. The two best kinds of baskets for shipping grapes are the ten pound and the twenty pound, or sixteen quart. Use the large size for the general crop and common variety, the small for choice and early varieties, or for local market. Some basket factories turn out still smaller sizes, with wire handles, holding from two to five pounds; these will be found excellent for those selling on an open market, as they are no great weight for purchasers to carry, and look attractive when filled with choice grapes. Never ship unripe grapes; it is, alas! a far too common practice; but nothing injures the grape market so much and so permanently.

Pears.—In picking, avoid bruises, and do not separate from the stem, which is considered an ornamental feature. Do not let them hang too long upon the tree. All early kinds will sell much better if picked after they have attained their full size, and yet before they are ripe, and allowed to ripen gradually in a cool place. If intended to be placed in an artificial cooler, they should be picked as soon as they will readily come off the tree. Cull out small and imperfect fruit at once, pack in barrels and sell as such; if sold early they will generally fetch enough to give a profit, but usually there is little demand for such after September. The choicest specimens should be shipped in twelve quart baskets, or in bushel boxes; the rest of the crop, especially if pears be plentiful, is best marketed in barrels or half-barrels.

Apples.—The packing and shipping of apples, more especially if intended for the Old Country, demands a great deal of care and trouble, and involves some considerable amount of risk. Those who do not wish to take the proper amount of care, etc., had better sell at home for a certain fixed price. Summer apples are usually sold at home in the local markets; the choicest specimens can be sent in twelve quart baskets, the rest in barrels and half-barrels. The same applies to most of the early fall varieties, which are usually too soft to stand the voyage across the ocean. The late fall varieties should be shipped early, then follow with early winter, then medium, and then late keeping, finishing up with the longest keepers in the spring. As a rule, winter apples are allowed to hang too long upon the trees. About the 20th of September is quite

late enough to begin picking the earlier winter varieties, such as Kings, Cranberry Pippins, Greenings, etc. Pick very carefully, handling the fruit as though they were eggs; there is far too much rough tumble work done amongst apples. There are two ways of packing the crop—either pick and pack right in the orchard, or pick, place in barrels or bushel crates, draw into a store-house and pack at leisure. The writer prefers the latter system, unless the apples are to be sold immediately, or are all hard, late keeping varieties. In either case, to pack properly, a movable sorting table is required. It should be about the following dimensions, viz., seven to nine feet long, three and a-half to four feet wide, with a rim all round it five to six inches high; the legs at one end should be three or four inches longer than at the other, so as to allow the apples to roll down towards the sorter: wheels can be attached to the legs if used in the orchard. Three ordinary grades of apples should be made: No. 1, all first-class perfect apples; No. 2, good cooking apples, but imperfect; No. 3, apples for cider or stock. Besides this, a fourth grade should be made of choice varieties, such as Blenheim Pippins, Kings, Spys, etc., containing the choicest highly-colored specimens; these, if carefully packed in half-barrels, will usually command a high price in the Old Country. Grade very carefully and honestly, and let each brand be exactly what it professes to be. In packing, use a lever or screw press; the former will, I think, give more satisfaction and is more generally used. Stand the barrel on a block or plank, so that the ends of the press can get easily under it; lay the first layer in by hand, afterwards empty gently from a basket, and as each basket is emptied in give the barrel a shake; heap the barrel slightly and press down till it is perfectly tight; then nail the hoops, fasten in the head securely, and brand the variety, quality, shipper's name, and the address of the consignee upon the head distinctly. Ship as soon as possible after packing, unless intended for storing. As a rule, in shipping to the Old Country it is a mistake to ship on consignment, except to one of the large distributing centres, such as London, Liverpool or Glasgow; and when shipping to London it is advisable to ship *via* Liverpool, as, if sent direct, the fruit is apt to be tampered with on its way up the Thames and at the London docks. The commission houses on the other side are not very satisfactory, but some are better than others, and it is advisable for beginners before shipping to obtain advice from an experienced hand, as to whom to send their fruit to, as otherwise the result may be disappointment. In conclusion, the writer would say, that if sufficient care and trouble be taken, the results of sending apples to the Old Country are fairly remunerative, taking good and bad seasons together.—F. S. H. PATTISON, Grimsby, in Farmers' Advocate.

Mills' Peach.—According to the Leamington Post, Mr. George H. Mills, of that town, has raised three seedling peaches of great promise, all ripening the first week in August.

PEAR CULTURE.

S the pear is a very profitable and delicious fruit, when it is profitably grown, it should give most desirable results.

The Soil.—Pears may be grown profitably both on light and heavy soils. A rich soil and good culture is essential to success in pear growing. The best fertilizers for the pear are ashes, bone dust, potash, etc. Stable manure may be used moderately, but excess tends to produce black-heart in the wood.

Pruning.—The dwarf varieties should be pruned more severely than the standards. To attain the pyramidal form in the dwarf, after the first season's growth shorten the main stem or leader, so as to encourage a stronger growth in the lower branches. After the second season shorten the leader again, and also cut back the lower or side shoots to give the tree the proper form. The young growth should be nipped off from the side shoots in order to form fruit spurs for the next season. One of the new shoots should be left as a leader to each parent shoot. Standards will require some pruning to develop symmetrically, and if they are tardy bearers they should be freely pruned. Feeble growers in poor soils need little pruning. All *ingrowing* branches should be entirely removed.

Varieties.—About three thousand sorts are known, yet not more than twenty-five or thirty are valuable for general cultivation. An American fruit-grower after testing three hundred sorts, recommends the following for general culture:—Bloodgood, Clapp's Favorite, Julienne, Bartlett, Seckel, Shelden, Lawrence, Buffum, Beurre Bosc, Belle Lucrative, St. Michael's Archangel, Beurre Clairgeau, Rutter, Beurre D'Anjou, Doyenne Boussock, Duchess, Urbaniste.

Grafting.—Early in the spring is the best time, when the buds begin to swell. The scions should be cut a few weeks before being used, and placed in cool, moist sand. Cleft grafting is more suitable for large stock, and whip grafting for small. In cleft grafting the stalk should be cut off square and smooth, and then divided in the centre by a sharp steel wedge. The graft should be cut in the shape of a wedge, and inserted till it fills the cleft made by the wedge. The line of division between the bark and wood of the graft should coincide exactly with that of the stock. Whip grafting is done by cutting both scion and stock diagonally, so that the parts coming together shall fit exactly.

Three parts of resin, two parts of tallow, and three parts of beeswax make a good grafting wax.

Tiverton. A. H. CAMERON.

THE ENGLISH AND AMERICAN APPLE MARKETS.

PERHAPS it is fortunate that the full apple crop in Great Britain should come just when our American crop is light. From all appearances it will be late in the season before Canadian apples will be wanted in England at all, and in the meantime we will be finding other markets nearer home. Chicago wants our Canadian apples. The Americans saw our fine exhibit at the World's Fair, then they opened their eyes, and now they will open their purses, for our best fruit. Fine Canadian Spys are the favorite apples in Chicago, and buyers from that city compete strongly with English buyers for our apples. No doubt the former will bid strongly for Canadian apples this year, because many of the States west of us have a very short crop.

Another point in our favor this season, is the exceptionally fine appearance of our fruit. There is always room in every market for high grades of fruit at paying prices, and no doubt Great Britain will want our fancy grades, even if there is a good home crop there.

Mr. J. Thomas, of London, England, writes as follows: Being now in possession of ample information regarding the condition and prospects of our own apple crop, as well as that on the Continent, I have pleasure in submitting the following summary for the perusal of intending shippers from American and Canadian ports.

Our home growers are almost unanimous in reporting exceptionally fine weather during time of blossoming of fruit trees, which commenced early in the season; but during the period of setting, some injury has occurred from frosts and east winds. Subsequent bright summer weather has, however, tended to strengthen the growth of all fruit.

In some districts there has been a continuous drought for several weeks, with the result that a great portion of the fruit has fallen off; this condition is, however, mainly confined to the immediate vicinity around London.

Taking the whole of the principal apple-growing districts, the result may be summarized as follows:—

(1) That the estimated yield of apples will be nearly double that of last year.

(2) That the condition of the fruit is very good in size and color.

(3) That there will be a fair average yield of late sorts, showing a healthy appearance, and likely to ripen well.

Advices from France, Belgium, Holland and Germany, are almost unanimous in reporting a large yield of apples. Pears, however (I may add for those interested in this fruit), are reported as exceptionally light, both on the Continent and in Great Britain.

From the above reports it is evident that, provided the weather continues favorable, our markets will be fairly well supplied with apples; and arrivals from your side may only be expected to meet with some demand from November

month, that is for choice large kinds of apples. Inferior sorts and small kinds will not be required for the London markets.

Messrs. L. H. Williams & Co., of Liverpool, write : On reliable reports from all parts of the United Kingdom, and from orchard districts on the Continent, we learn the apple crop on this side of the Atlantic is heavy ; hence, until well on into the season, only moderate supplies will be required from your side, and those must be of fine quality, as the Home stocks will supply our markets liberally with fruit equal to your second grades.

We strongly recommend your closest attention to the quality of fruit shipped.

Messrs. Woodall & Co., of Liverpool, write : The past season, as shown below, was one of large imports from both America and Canada, and during the month of November arrivals into Liverpool were 290,000 barrels, which exceeded any previous import ; the next largest being in November, 1891, when 250,000 barrels were landed in this port. On both these occasions it was feared the large quantity would cause a collapse in prices, but the exact reverse was experienced, especially during last November, when there was a brisk demand throughout, at what must have been satisfactory prices to shippers. The quality of the fruit varied : from New York and Boston it was undoubtedly good; from Canada generally medium to poor, with occasional bright exceptions; while Main fruit was nearly all small and disappointing. Altogether the season may be considered to have been satisfactory, although towards the close there were some disappointing results, caused entirely by the inferior quality and poor condition.

The position for the coming season is not so promising as last, and in all probability there will be sufficient home-grown fruit to supply requirements until the middle of October. This decidedly means that none of the early varieties of American and Canadian apples can be shipped to advantage. After this there is a fair prospect for good winter stock, especially Baldwins and other red varieties, as it must be remembered that American and Canadian are superior to any other.

Messrs. Frank Rand & Co., Liverpool write : Throughout the different fruit growing districts of this country, up to the present the reports are to the same effect, and that is, that we shall have a very large crop of every variety of apples. From the Continent the news is to the same effect—Holland, Belgium, Germany, and France, all having good crops this year. It is too early at present to say whether we shall require any of your apples for some months to come, but our impression is, that American, Canadian and Nova Scotian apples will not be wanted here in any quantity before December next, when no doubt some good colored fruit would sell at remunerative prices. Respecting winter apples we think these as usual will do well, as the English crop is finished, or nearly so, before your winter apples arrive.

Consignments of the autumn or early winter fruit must be of the very best quality, and only best colored apples will be wanted ; and any quantity of ordinary fruit would be sure to meet a bad market for some months to come.

APPLE GATHERERS.

I NOTICE the apple gatherer illustrated in the Rural New Yorker o September 1st, with "patent applied for." In 1876, we had a large lot of apples to gather on our fruit farm near Cynthiana, Ky. The apples were fine, the price low and the help scarce. So we, from necessity, had to draw on our wits for help. On the place was a low-wheeled feed wagon with a bed 18 feet long, very wide, with sides flaring out. On this we constructed a light, strong frame with top rails 18 feet long, nine feet wide, and when on the wagon, about five feet high. We made a strong canvas cover and tucked it securely all around on the top rail, cut a slit in the centre the long way, except about two feet at each end, bound a twine on this edge, and about every three feet tied the two edges together with a bit of twine. One man at each end could set the frame, canvas and all, on the wagon or off on a set of trestles.

With this equipage, one man drove a strong, gentle team along the rows on one side, stopping as close as possible to the tree ; a boy in the tree shook half the apples into the canvas, and of course they ran to the centre and through the slits into the wagon bed. The man meanwhile picked a few from the lower limbs, picked up some good ones that fell overboard, while another boy stretched out his limbs, helped a little, and scrambled into the next tree in time for the on-coming wagon. The wagon was driven up one side of the row and back on the other side, with the result that one man and two boys gathered four loads of 50 bushels each per day, hauling them a quarter of a mile, sorted them and put them away, part for keeping and part for the cider mill. I never saw apples come in in better condition, or keep better. We used that device for a number of years, and hundred of persons saw us at work with it.

About ten years ago we let our wagon go down, but bought at Cincinnati for $18 a circus tent about thirty feet in diameter. We used the body of the tent to patch a tarred roof on a tobacco barn, but inverted the top, cut it from the center to the circumference on one side, fixed a twine on each side at the centre and circumference, and tied the centre around the tree. We cut poles about eight feet long, and sharpened them at one end, so that the point would hold in the eyelet holes around the circumference, tied a small rope in the same eyelet, drew it back in a direct line over the pole from the tree and fastened it by a large spike driven in the ground. We cut a few slits two feet from the tree but outside of the circling rope, shook the apples, and found them in a pile ready for assorting and in fine condition.—J. A. McKEE, in Rural New Yorker.

SEEDLING PLUM.

Messrs. Allan Bros., of Winona, Ont., sent us, on the 8th of August, a new seedling plum, just about in season for use. The color is green, and the quality excellent. Should the plum prove valuable, it will be more fully described.

COMPOSITION OF THE APPLE.

PROF. F. T. Shutt, Chemist of the Central Experimental Farm, Ottawa, has issued his report for 1894. In addition to other interesting points, he has given the chemical constituents of the apple. Taking an average of four varieties, viz.: Duchess, Wealthy, Fameuse and Spy, he gives the following result:—Water 86+, organic matter 12+, ash .28, nitrogen .0428.

In the same varieties, the average percentage of important constituents of the ash was:—Phosphoric acid 8+, potash 55+, soda 2+, oxide of iron 1+, lime 4+, magnesia 4+.

It is noticeable that potash is the chief component of the ash, being over half, and about six times the phosphoric acid; but in the apple leaves it is only double. The ash of the fruit is chiefly found in the seeds and walls of the ovary, comparatively little being found in the flesh. Evidently, therefore, the small apples extract as much fertility from the soil, and draw upon the strength of the tree about as much as the large ones.

For the supply of nitrogen, Prof. Shutt recommends barnyard manure, or the turning over of some leguminous crop, for in addition they furnish humus, which is of great mechanical benefit. Besides this, he considers that as the period of growth and fruit development in the apple is comparatively long, organic manures in most instances will probable give better returns than those containing more soluble forms of nitrogen, such as nitrate of soda, or sulphate of ammonia. For the potash, he commends wood ashes, which, in most parts of Canada, afford the cheapest form in which to purchase this constituent, besides being in a condition rendering it easily available. If wood ashes are not easily obtainable, kainit and muriate of potash may be substituted. For the phosphoric acid, bone meal and superphosphate may be used. Bone meal contains 2 or 3 per cent. of nitrogen, in addition to the phosphoric acid, but requires a great length of time in the ground to give up its constituents; its effects last longer. For this reason it is often advocated for orchard fertilization.

Chrysanthemum Culture.—It should be borne in mind, that though plants have to be pinched back a time or two to render the plants bushy, every successive crop of shoots will be weaker than their predecessors. If the pinching back is done after mid summer, only weak shoots are produced, and this means weak flowers. Another point to be cared for is to preserve the old leaves as long as possible. When the plant loses its leaves early, the flowers are liable to be particularly small.—Meehans' Monthly for June.

AUSTRALIA AS AN APPLE MARKET FOR ONTARIO.

WE are in receipt of a very kind letter from Mr. J. S. Larke, Canadian Commissioner, who has oversight of the Commercial Agency of Canada at Sydney, N. S. W. Mr. Larke, as our readers will remember, was Executive Commissioner for Canada at the World's Fair in Chicago in 1893. His letter is in reply to an inquiry concerning the probable advantage to Canadian fruit growers of shipping their apples to Australia at that season of the year when the Australian markets are bare of native apples, namely, during the months of October, November and December.

On page 144 of the CANADIAN HORTICULTURIST for 1894, will be found some information given us by Mr. Olds, the General Traffic Manager of the C. P. R., in which he offered to forward Canadian apples from Toronto to Sydney at $1.50 per 100 lbs. At that time the steamers were leaving Vancouver on the 16th of each month. The time required for the sail to Sydney was about twenty days, and Vancouver is about sixteen days from Toronto, so that we might count that our fruit would reach Sydney in a little over the month from the time it leaves Ontario. Winter apples wrapped in tissue paper and carefully packed in boxes should carry in good condition for that length of time.

Mr. Larke's letter is full of useful information, and we need make no apology for giving a large extract from it, as follows :—

"In regard to the shipment of fruit here, the result would be very problematical. They do not use apples in this country as we do in Canada, mainly because of the expense, and on account of the cheapness of meat, leading to a much larger use of it than with us. This is the apple season of this country, the fruit being brought from Tasmania. I yesterday bought a case of cooking apples, hard and green. These cases contain, nominally, 40 lbs. of apples, generally less. Yesterday, the case I bought cost six shillings and sixpence, delivered at the house, and these were bought from a wholesale house. This is nearly $2.50 per bushel. The market prices, I observe, are somewhat less than the above, but I have never succeeded in buying at the market prices, and presume that they are the prices paid by the wholesale dealer.

"The cost of handling fruit and most other things is very high. A gentleman told me that he has hundreds of cases of oranges rotting under the trees. He says he cannot realize one shilling a case in Sydney, while the consumer has to pay five shillings or more, for the same fruit, if his statement is correct. As a consequence, the fruit growers complain a good deal. The grower of the Tasmanian fruit sometimes realizes fair prices and counts himself well off when he secures three shillings and sixpence per case at Hobart. He expends out of this the cost of making the case, which is an item, as lumber is costly : teaming it to his nearest river port and freight to Hobart, and usually threepence as

cash commission. He cannot always get that, and I am told that there will be thousands of cases of apples that will be left to rot in the orchards through failure to get a profitable market. These apples will soon be out of season, and apples shipped from Ontario in November would reach here when the market would be bare of Australian fruit. They would, however, have to meet the competition from California. Last year nearly three thousand cases were sold from that country. The prices realized would run from eleven to fifteen shillings per bushel. This price is too high for a large consumption. There is at present a duty of one shilling per bushel, which will, perhaps, be removed upon the first of January next, although this is exceedingly doubtful. I cannot tell you what you would be able to lay down a car of apples from Grimsby to Sydney. You will be able to ascertain this from a C. P. R. agent, who would perhaps give you a low rate on a trial shipment. In competing with California, you would be competing with apples with no overland freight of any extent to pay; but I think a shipment of such apples as the Northern Spy would bring a higher price than the California product. There is little doubt that they would stand the journey and reach here in good condition. I think, however, I would ship them in cases containing a bushel each. Barrels are expensive for shipping by water, as six of them make a ton of forty cubic feet. If you care to make a shipment in October, to catch the steamer leaving Vancouver November 16, I shall do the best that can be done with them as an experiment. I would recommend that they should be put into the auction room, unless I could get remunerative offers beforehand. This sale would attract attention and ascertain whether a high price could be obtained on account of the quality. Should you do this, I would recommend that a small lot be sent to me as samples by the October ship, and in this way I would submit them to fruit dealers, so that they would get a knowledge of the fruit that would come, and perhaps they could be sold before the shipment arrived. They should be insured, to cover value to the shipper and costs of freight. This insurance should cover risks of freezing overland and spoiling on route. I rather expect it would be difficult to get the Government to pay the expense of a shipment of this kind, as they do not appear to have too overflowing a treasury just now. My services will of course cost nothing.

"In addition to what I have stated, there would be some charges for cartage, dock charges, handling, etc.; but I think that if put up in bushel cases, as before mentioned, I might estimate the expense to be something like this: duty, 1/; handling, cartage, commission, etc., 1/; freight, 6/. If they could be sold at 12/ a bushel, this would leave a very narrow margin; if they could bring 15/, that would be very much better. If you could arrange for a portion of a cargo, I think it would be better than for a whole carload. It would also be advisable, if the experiment is decided upon, that I should be advised as early as possible, to prevent a larger quantity of California apples being ordered than might otherwise be the case. As a quantity of apples is pretty sure to be sent to British Columbia, a few cases might be sent here, as the steamer would take, I think, 100 cases at a very little higher rate than 1000."

PREPARING PLUMS FOR MARKET.

In most cases experience has proven that plums, if shipped to market in ten-pound grape baskets, provided with handles, and put up in neat, presentable shape, will bring the producer a greater per cent. of profit than if shipped in half-bushel, or bushel crates, or packages. A careful picker can fill the basket direct from the tree; but the usual plan is to pick into large receptacles, then, carefully sorting the plums, to place them in packages ready for the market. This frequent handling removes a great deal of the bloom from the fruit, which removal should be avoided as much as possible. By the use of a single table, similar to the one shown in the engraving, from the American Agriculturist, plums and other similar fruits are easily sorted. The top of the table should not be over three feet long and two and one-half feet wide. The sides and back, r, r, r, may be eight inches wide at the back, tapering to three inches in front; the front guards, c, c, should be less than three inches high, leaving a six-inch space between the inner ends; the slanting board, g, is six inches wide. To operate it, place the fruit carefully upon the table, the sorter occupying a chair in front of the table, with a basket on his lap. Both hands can then be used in removing the leaves, limbs, damaged or imperfect fruit, throwing the refuse into baskets, m, m, located upon the floor, at a convenient point upon each side. The perfect fruit or that intended for shipping, is rolled in front, and passes over the incline, g, into the basket. This table need cost but little, and may be made in as crude or elaborate a form as wished. In working, the elbows can rest upon the guards, c, c, which will make the operation much easier. An ordinary table can be fitted with these simple appliances, and quickly removed after the shipping season is passed.

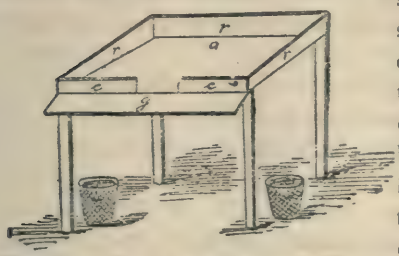


FIG. 824.—TABLE FOR ASSORTING PLUMS.

The Apple as Medicine.—Dr. G. R. Searles, of Brooklyn, N. Y., thus discourses on the apple as medicine: "The apple is such a common fruit that very few persons are familiar with its remarkably efficacious medicinal properties. Everybody ought to know that the very best thing they can do is to eat apples just before retiring for the night. Persons uninitiated in the mysteries of the fruit are liable to throw up their hands in horror at the visions of dyspepsia which such a suggestion may summon up; but no harm can come to even a delicate system by the eating of ripe and juicy apples just before going to bed. The apple is an excellent brain-food, because it has more phosphoric acid in easily-digestible shape than other fruits. It excites the action of the liver, promotes sound and healthy sleep, and thoroughly disinfects the mouth. Thisis not all. The apple helps the kidney secretions and prevents calculus growths while it obviates indigestion, and is one of the best preventives known of diseases of the throat. Everybody should be familiar with such knowledge."

EXPERIMENTAL FRUIT SHIPMENTS.

Probably there is no department of our experimental work so important as are experiments in finding new foreign markets for our Ontario fruits. Year by year it is becoming more evident that, unless new outlets are found, the fruit-growing industry will gradually become less profitable to growers, and the prosperity of our province will therefore be less marked.

In response to a delegation from the Fruit Growers' Association who visited Ottawa asking for cold storage accommodation on steamers bound for Great Britain, the Department of Agriculture has sent us the following message :— "Government will provide cold storage chamber on steamers for two trial shipments of fruit on the date which shippers may select." A letter from Mr. H. B. Small, the Secretary, further explains that there must be not less than one carload in each shipment, nor more than two carloads, and that the temperature on board the steamers can be held at from 32° to 40° Fahr. Shippers will be charged the usual freight charges of 20/ per ton of seventy-five cubic feet actually occupied from Montreal to the port in Great Britain. The steamers which are fitted up with cold storage accommodation go to Bristol, Liverpool and Glasgow. Shipments to London can be made via Bristol at the rate of 35/ per ton of seventy-five cubic feet from Montreal. Railway cars go alongside of steamers at Avonmouth, so that no cartage is required, as is the case at Liverpool on goods for London.

Mr. John Craig, horticulturist at the Central Experimental Farm, Ottawa, is to act in conjunction with the Fruit Growers' Association to arrange for the preparation of the lots to be shipped. The fruits are to be sent forward at the risk of the shippers and sold on their account by such persons as they may direct. The Fruit Growers' Association is asked to appoint a committee to collect or arrange for the preparation of the shipments, to be made up of such sorts and varieties of fruits as would likely meet a good market and lead to the development of trade in them. Any shippers in Ontario who desire to join in this experiment will please correspond with Mr. A. H. Pettit or with Mr. John Craig.

It is probable that the Board of Control of the experiment stations of Ontario will send forward a trial shipment made up of the various fruits grown in Ontario, more especially the tender fruits which are likely to do well in the British markets. Tomatoes, peaches, grapes and pears are among the fruits with which it will be well to experiment. These fruits need to be wrapped in tissue paper and firmly packed in small packages. Any fruits which are to be shipped through by our Board of experiment stations will be consigned to Mr. Byrne, the Ontario Government agent at Liverpool.

WINTER FLOWERING BULBS.

THE time is at hand for arranging winter and spring gardens. Nothing is more pleasing than a few choice plants in the window, and among all the many beautiful flowers none are easier of culture than the winter flowering bulbs. Before saying more about winter flowers let us notice those that require immediate attention for next spring and summer bloom. Lilies are extremely pleasing. One variety in particular should have attention at once if it is to flower in the garden next June—Lilium candidum. This lily makes its growth in early fall and should not be planted out later than October 1. Earlier planting is better. It must get its growth in the fall in order to flower the following spring.

The best lily bed I ever had was made by throwing out all of the soil to a depth of 18 inches. The bottom of this bed was a little higher in the centre. the first eight inches was extra rich soil made by mixing good loam and old cow manure thoroughly rotted. Then came a layer of two inches of sand. On this were set the bulbs about nine inches apart each way. Sharp sand was used to cover these bulbs, and above this I put more good rich loam. This left the crown of the bulbs about six inches or a little more under the surface. This distance apart would be a little close for the large growing sorts, but for the smaller kinds it will be about the thing. All lilies are better if a foot of leaves or rubbish is raked over them about December, as hard freezing will injure some varieties.

Crocuses also should be planted in September. Dealers will tell you they can be planted at any time. So they can, but they may never flower if planted too late. They must get a root-hold before the ground freezes, so get them in before October. A few crocuses in the lawn look very pretty in early spring. With a sharp knife cut the turf in the form of a triangle, making a hole large enough to put the crocus bulb into. Loosen the soil a little, then place the little bulb in, so it will be about two inches under the surface. Now place the turf back, pounding it firmly in place. The sod will not know it was ever disturbed, and the little plant will find its way through at the proper time.

Snowdrops may be planted the same way. The lawn mower will not be wanted in the spring until after these early messengers are through blooming. A few other bulbs that are in the market early should be started in pots for the house. Roman hyacinths, freesias, narcissus (polyanthus type and Van Sion), allium (not of much account), jonquils, anemones and oxalis, all should be pot-

ted in good garden soil and allowed to remain in the dark for six weeks or until the pots are well filled with roots. If convenient there is no better way than to set the pots on boards and cover all with sand deep enough to have the sand six inches over the pots. A good potting soil is composed of five parts turfy loam, two parts good rotted cow manure or sheep manure, two parts rotted leafy soil and one part sand. This makes an ideal potting soil for bulbs.

Put three Roman hyacinths in a five inch pot or five bulbs in a 7 inch pot. Fill the put full of soil, press the bulbs down so the soil just covers them, then shake the pot so as to settle the soil enough to leave room for watering—about half an inch. Freesias may be planted in the same way; six or eight bulbs can be set in a five inch pot, while a seven inch pot will hold a dozen. Narcissus being a larger bulb and having more top requires more space. For N. Van Sion, one bulb to a four inch pot or three to a five inch pot. Paper White about the same. Jonquils can be set thicker; a six inch pot will hold a dozen. This covers the bulbs that requires prompt attention to have early blooms. Many of them can be had in flower at Christmas.—W. F. GALE, in Farm and Home.

A FRUIT BARROW.

The ordinary wheelbarrow is unsuited for wheeling baskets and boxes of fruit, such as plums, grapes, strawberries, etc., because of the slope of the bed. The accompanying illustration shows a fruit barrow that is free from this objection, and one that will be found equally convenient in wheeling other articles that must be kept quite horizontal to avoid spilling. It can easily be made if one buys one of the light iron wheels that are now sold at hardware stores for just such uses as this.—American Gardening.

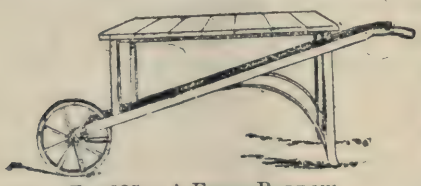


FIG 825.—A FRUIT BARROW.

Our Freesias had been kept dust dry in their pots all summer, and on a wet day some weeks ago we had them all turned out and the bulbs picked up into boxes. We are now potting off a lot of them for early blooming. We will keep over about two-thirds of the biggest bulbs to be potted up later on. The small and medium sized bulbs if required should all be potted or boxed up at once, and allowed to start into growth early and have a long season, this is conducive to a considerable increase in their size. The pots now filled are set out on a bed of ashes beside the callas, and we shall let them stay there longer, for a few degrees of frost, if their pots are plunged in ashes, etc., won't hurt the tops.—Gardening.

FALL WORK AMONG THE FLOWERS.

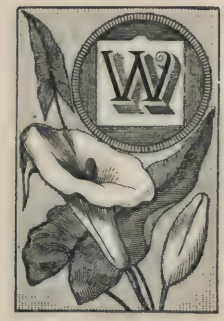
GERANIUMS intended for winter blooming may now be started. The shoots used for this purpose should have bloomed once to be sufficiently matured to insure freedom of growth and flowers immediately. Six inches or thereabouts is the best length for a cutting of this plant. No buds should be allowed to remain on cuttings when set, nor should they be allowed to bloom before November. By being thus kept back the plant will have acquired the needed strength for perfect and profuse blooming. Geraniums require very little water, and their tendencies to bloom are increased by excessively hot, dry weather; but little moisture should be allowed them, even when starting the cuttings, the least excess causing the black rot to destroy them.

Verbenas required for winter and early spring bloom must be potted now while the days are warm, so as to be thoroughly rooted before cool weather. Old stock verbenas should never be used for this purpose. It will be observed that this plant throws out many long runners which, during a damp season, take root at every joint touching the ground. The proper part for potting is the plant that is obtained by cutting off a runner just back of where it has taken root. The other or top end should be cut down to three or four inches. These plants may be set in separate pots or several in a large pot. Fuchsias may now be started with better success than during the warm months. Rose cuttings may be set, and roses that have ripened their wood should, if they require repotting or being removed from the open ground to pots, be changed before fall rains induce new growth and buds. All plants requiring removal will be found to endure the change much better if they are allowed to become very dry before they are disturbed; after potting, water thoroughly and shade for a few days. We frequently remove plants from pots where they have become very dry to the open ground or boxes, in the most sunny situations in mid-summer, without their showing the least sign of having been disturbed.

Chrysanthemums of the late blooming and tender varieties should now be potted and pruned to a neat form. The tall growing sorts should be topped down to about two and one-half feet. This will cause side branches to be thrown out, and give the plant a stocky, tree-like appearance. If when the buds begin to show two-thirds of them are pinched out, those remaining will make much finer flowers than if all are allowed to grow.

Dahlias should be pruned closely, and where more than one bud appears on the end of a shoot they should be taken off, as also all seed vessels except those required to be saved. The stalks of all gladioli and lilies that have done blooming should be broken off, as the production of seed impoverishes the bulbs, thus doing injury to future flowers. Balsams having the tip of each branch and the main stem broken out will continue to bloom till frost.—MRS. J. T. P., in American Cultivator.

FLOWERS AWAY FROM HOME.



E are apt, as we wander along our roads and over our fields, to imagine that what we see, as representatives of plant life, are much the same wherever we go. It only requires a trip such as the writer lately made to learn how erroneous this idea is. While attending a summer school at Colorado College, located at the base of the Rocky Mountains, in the vicinity of the famous Manitou Springs and Pike's Peak, an excellent opportunity was afforded to study the marvellously varied and attractive flora of the district. We shall not attempt to write an extended article upon the flowers of Colorado, but simply direct attention to some of the most common and attractive, readily observed by any one, as he wanders in the vicinity of this beautiful place. You are 6,000 feet above sea level, in a region where rain is comparatively scarce ; the air is very rarefied, but clear, dry and invigorating ; your lungs will require to respire 700 times more in a day and your heart beat 8,500 times oftener daily than it does in the east. Places seven miles distant do not appear farther than a tenth of the distance.

With such conditions as an environment it is not a matter of surprise that the nature of the flowers should be so modified as to result in forms widely different from what we see in Ontario. One of the first plants to arrest your attention upon vacant lots is the "Soap Plant" or "Spanish Bayonet" (*Yucca*), a flower cultivated in Ontario with great care. It grows from 2 to 4 feet high, and bears beautiful blossoms all the way down the stalk. These are nearly as large as tulips, and much the same shape. Thus, here we find one of our most beautiful flowers a weed. The leaves are sword-shaped, sharp and stiff, and twelve to twenty inches long. The root is used by the Indians instead of soap, and hence the name soap plant.

Not common on the plains, but readily found on the mountains, is the beautiful Columbine (*Aquilegia Cærulea*), now regarded as the "State flower." No where does the Columbine grow so large and beautiful as here ; the colors are so rich, lilac and pure white, while the flowers are four times as large as ours will form. In the "Garden of the gods" at the base of Pike's Peak we found the much sought for Mariposa lily (*Calochortus*). This is another choice flower of Colorado, with its delicate lavender color, touched with yellow or orange, brown and white. No more attractive object could be seen than these beautiful blossoms adorning some shady spot.

The Primrose is found in great variety, and decks the plains in every direction. The blossoms vary in size from a penny to three inches across. Many are white, but some are a beautiful pink. Wild roses grow in profusion, some of the most beautiful were found not far from where the Mariposa lily grew in the "Garden of the gods."

On every side is seen the White Mexican Poppy (*Argemone*). It covers the prairie, as you approach the mountains, and presents a beautiful appearance with its large white with yellow centre flowers.

All along the base of the mountains the Clematis decorates many a spot, at the side of paths along which you tread your way.

In some places the Prickly Pear cactus (*Opuntia*) is readily found, and in some the "Dwarf, or Cup cactus." Both bear beautiful flowers which from their low position present an attractive appearance to the patches of dry prairie where they are found.

Gilias of scarlet (sometimes forty blossoms on a stem), can be selected before you reach the spot where they grow, and beatiful gentias, in their rich purple hues, add their quota to the beauties of a natural flower bed, as it borders some mountain stream. A geranium much like our wild form but more highly colored is quite common. A near relative of our burrs and forget-me-nots, lungwort *Martenzia*, occurs in several places. Near the mountains, especially at Denver, a very beautiful foliage plant is very common. Its leaves of green bordered with white, presents a peculiar appearance, on account of which it no doubt has been termed "Snow on the Mountain" (*Euphorbia marginata*).

The vacant lots in Denver are covered with a very beautiful flower common throughout Colorado, the Cleome. In bloom from August to September, and even later, its dense masses of purplish flowers are very pretty. Some claim that it is a good honey plant, supplying nectar at an opportune time. The reader will be inclined to ask "Are there no flowers in this El dorado described, akin to those in Canada?" We find a few, but as a general thing, they are of different species. Some vacant lots in Colorado Springs are covered with a sunflower about three feet high, the flowers of which is about three inches in diameter. Colorado College campus abounds with these. Other forms of yellow composites related to our ox-eye daisy are also common. In fact, travel where you will in the vicinity referred to in this article and you find yourself in a veritable flower garden. I should have mentioned among other forms the beautiful Prairie clover, white and purple varieties, *petalostemon*, and the spiderwort *Tradescantia Virginica* blooming in abundance, and adorning the wayside with its rich purple flowers.

If you climb Pike's Peak for nine miles up a grade of one foot in every five and a half feet, and in some places one in four, on the railway track which leads to the summit, as you leisurely tread your way, a new flora will pass in review before you; plants of Alpine variety appearing as you ascend, such as miniature campanulas, thistles, saxifrages, gentians and primroses. Even at the summit, 14,147 feet above sea level, far beyond the tree line and in regions of eternal snow, upon the fragments of granite, you find minute plants, blooming throughout the summer. At this altitude the barometer rarely rises higher than 17 inches, and water boils at 186° F. All plant life is dwarfed, and forms of fair size at the base, are represented by exceedingly small types.

We have thus two distinct floras : the *Mountain*, Alpine in nature ; diminutive in size, rich in perfume and color ; the *Plain*, more varied in character and larger in size. Thus you find colors and flowers almost entirely different in species from those in Ontario, presenting great variety in size, form and beauty, and thoroughly impressing upon the mind of a visitor the wonderful influence environment has on plant life.

J. HOYES PANTON, M.A., F.G.S.

Flowers for Invalids.—In our endeavors to make our sick rooms as cheery and attractive as possible, we surely must not leave out the growing plants. The old erroneous idea that they were unhealthful in a sleeping-room appears to have faded into the background, much to the good fortune of the sick folks, whose eyes weary for the sight of something green and growing and alive. It is pleasant to watch the new leaves coming out, and the pleasure partakes of gentle excitement when a flower bud is discovered and watched to maturity. The whole room, too, is so much cosier and more home-like for the presence of a few plants in it. They may be scattered about the room, at the windows or on brackets, but a few, at least, should be close to the bed—real *neighbors* to the sick one. The illustration given here suggests a simple, oblong table to hold four or five pots of them. It is very easily manufactured at the home work-bench, and when filled with plants and set at the bed's foot, it cannot fail to give great pleasure and comfort. There should be no ugly pots and jars upon it, but a few choice flowers in choice dishes. Artistic pots are as much a part of the kindly little scheme as the dainty posies themselves.—American Gardening.

FIG. 826.

Bulbs.—If you haven't already ordered your bulbs, do so at once. Don't wait for the new fall catalogues, bulbs are the same year after year, with a few insignificant changes for variety's sake. Order from the old catalogues. It is time you had the Bermuda Harrisii lilies you want in bloom before Christmas potted ; for later they will do any time before September, and for Easter any time before the end of October. But there is nothing gained by keeping lily bulbs out of the ground a long time. Roman hyacinths and paper white narcissus for early flowers should also be potted at once. Pot or box up some early trumpet narcissi too. All bulbs should be started cool and slowly, so as to induce them to make good roots before their leaves appear above ground : hurrying them up is apt to throw them blind.—Gardening.

BEGIN ON THE LAWN NOW.

THE month of September is the best time for seeding new grounds, and all preparatory work on them should be completed this month. It ought to be kept in mind in making this preparation that it can be done but once, and it is for a long time ; therefore it should be thorough. Deep plowing or spading is a necessity for a good growth of grass. If the ground is wet or springy it must first be underdrained.

The final work is to pulverize the surface soil to the last degree ; it is not possible to make it too fine and mellow for the reception of the seed. If stable manure is ploughed in, it must be old and well rotted, otherwise the crop of weeds will be too great. In place of stable manure use at the rate of 300, 400, or 500 pounds to the acre of some good commercial fertilizer. When the grass starts, whatever manure or fertilizer may have been used, there will also appear more or less weeds ; many of these will be killed by frost later, but others will come again in the spring, for the seeds are in the ground and must germinate. Do not be surprised, therefore, to see them, but one need not be alarmed, for most of them will soon perish after cutting commences, or at latest by next autumn. Some kinds, however, should be removed in the early spring if they appear, especially dandelion and plantain.

In dragging and fining the surface soil see that all little depressions are worked out and the whole left as it is desired to appear when in grass. Use plenty of seed. It is poor economy to be stingy in seeding grass. The thicker it comes up the better the lawn, while if the seeding is sparse it often takes two or three years to remedy it. Choose a still day for seeding, when there is little or no wind, and scatter the seed as evenly as possible, and at the rate of at least four bushels to the acre. Afterwards rake over lightly, or if the surface is a large one, drag it with a light harrow or brush.—Landscape Architect.

Begonias love to be outside in summer providing they are shaded from sunshine, and are kept moist at the root and rather dry overhead, and by this time of year they are generally big, fat and flourishing. But very soon we are likely to have cool nights and occasional cold wet rains ; begonias under such conditions are apt to lose their working roots by rot, then no matter how good looking the foliage may be it soon will suffer, and the plants assume a sorry plight. This teaches us that they should be brought indoors early, say before the middle of September, and before any of these unfavorable conditions arrive. Window plants may be kept on the piazza over night and in stormy weather. Begonias that are planted out should be lifted and potted, kept sheltered in frames or a house, and shaded from sunshine, but not coddled at all. As a rule hereabout tuberous begonias have been less satisfactory out of doors than usual, but nothing is brighter as pot plants or planted out in frames, and covered with shaded sash tilted up day and night. Save seeds from the best varieties.—Gardening.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE NOVA SCOTIA APPLE crop is a full one, according to the July Provincial Crops Report.

THE ROSE AND STRAWBERRY meeting of the Ottawa Horticultural Society, on the 27th of June, was a great success. Mr. McGrady, of Gatineau Point, Que., showed 170 varieties; and the Experimental Farm, 150 varieties. Prof. Saunders gave a very instructive address upon the rose. A silver cup was offered by Mr. Scrim for the best twelve gladioli, shown in August.

CHOICE GLADIOLI.—A half bushel basket full of magnificent gladioli spikes came to hand on the 22nd instant from Mr. John Little, of Granton. What choice colors and what superb blooms! Mr. Little deserves a good name for his gladioli as well as for his strawberries. Grimsby Horticultural Society will hold their gladioli show on Sept. 17th. We want to hear from each Society after their flower meeting, with full particulars of the success of the new undertaking.

APPLES EXPORTED FROM CANADA TO GREAT BRITAIN.—The Report of the Department of Trade and Commerce for 1894 gives a comparative statement of exports to Great Britain during years 1890 to 1894, inclusive. The number of barrels of apples exported are given, and we quote them in round numbers, referring our readers to page 197 of the Report, for the more exact figures:—1890, 835,000 bbls.; 1891, 1,235,000 bbls.; 1892, 1,405,000 bbls.; 1893, 2,247,000 bbls.; 1894, 569,000 bbls.

CULTIVATION VS. MOISTURE.—Horticulturist Card, of Nebraska Station, urges frequent shallow cultivation as more effectual in conserving moisture in

the orchard and garden, during seasons of drouth, than irrigation as uaually practicable. By such cultivation a mulch of loose mellow soil is provided. This is in accord with results this year secured at Maplehurst with the raspberry plantation. Our Cuthberts were never finer, both in size and quantity, and yet, until after the middle of July, scarce any rain had fallen all the spring. Others complain that their berries have dried up, but the constant cultivation ours have received, has yielded us a rich harvest.

FIGS FROM GODERICH.—We have just received from Mr. W. Warnock, a gardener at Goderich, samples of figs which he says he has grown and ripened in the open air. The bushes are kept in tubs and wintered in the cellar. He says he has ripened them perfectly for two seasons. When he brings them out in the spring, he sets them on the south side of a building and on cold nights covers them to protect them from the frost. The fruit ripens about the middle of August. Our seasons are of course too short to ripen a second crop.

CANADIAN BALDWINS.—It is an interesting point to notice that Canadian Baldwins hold the highest place of any of the same variety shipped to the Liverpool market. Messrs. Woodall & Co. have just sent us a diagram showing us the market prices of these apples from Maine, New York and Canada, for five years past, and those from Canada kept a constant average above the others. In March of last year they averaged 30 shillings a barrel, while the New York State ones only two averaged 26 shillings in the same month. The best prices during the past five years, were obtained for apples sold in Liverpool after January 1st, and the poorest prices in the months of October, November and December.

POINTS FOR APPLE EXPORTERS.—Sir Charles Tupper, whose report appears in connection with that of Trade and Commerce, gives some good hints for apple shippers, gathered from letters written him by English dealers. First, there is an unlimited demand and sale for good Canadian apples, during six months of the year. Consignments should be spread over six months, so as not to glut the markets during the few weeks following the apple harvest Much of the fruit packed for export is not worth paying freight upon, and should be evaporated or otherwise used near home. The importance of the use of the standard size apple barrel, by all packers, is emphasized.

THE OPENING OF A CENTRAL FRUIT MARKET took place in Hamilton on Thursday afternoon, the 22nd instant. This is a most excellent movement, for what is needed is better distribution to make fruit growing a success. Toronto has long monopolized this work, but later, some enterprising shippers at Winona and Grimsby have entered into this business, and very much encouraged the fruit shipping business. Such names as E. D. Smith, and Thos. Carpenter, and Chas. Vanduzer, Grimsby, are well-known fruit buyers and shippers. Then the Niagara District Fruit Growers' Stock Co. has opened agencies in about two

dozen towns, and helped still farther the interests of fruit growing. Now comes this fruit market, so well situated at the terminus of the H. G. & B. electric road, receiving hourly consignments of freshly picked fruits from the Grimsby and Winona districts. We say success to every such enterprise which aids in the development of our chosen industry.

EXPERIMENTAL COLD STORAGE.—To make fruit growing yield the best returns, two conditions of handling the crop are needed, viz.: 1st, better distribution of it throughout all parts of our country, and, 2nd, some method of cold storage, in order to prolong the season of handling it. In the Report of the Horticulturist, Central Experimental Farm, 1894, Mr. Craig gives the results of some experimental work in this direction, as follows:—

1. Fruit for storage should be picked when fully grown, but before it has thoroughly matured.

2. Early pears, peaches and the larger varieties of plums should be wrapped separately in tissue paper.

3. Tight wooden boxes are the most satisfactory packages for storing and handling. When baskets are used, they should be provided with strong "veneer" covers.

4. Stone fruits, such as peaches and plums, under ordinary circumstances should not be held for a longer period than two or three weeks.

5. The marketing season for early pears and apples may be extended from thirty to sixty days, and under favorable circumstances, for a longer period.

6. The outcome of experiments with fall and early winter varieties of apples and pears, including samples of grapes, yet remains to be developed.

PHYLLOCACTUS LATIFRONS.—(See p. 178.)—On Sunday evening, the 18th inst., Mrs. Adolphus Pettit, one of the directors of the Local Society, called us in to see one of these plants with three magnificent blossoms just out. They were from seven to nine inches in diameter, and as feathery as flakes of snow. We tried to get a good photograph, but failed for want of flash light. A writer in the Cactus Journal writes of this variety as follows:—This finest of all Phyllos., commonly known as "Queen Cactus," is one that even the person who professes to despise cacti, will at once fall in love with. It is the largest flowering of its species. One which my mother owns (and it is the only one, except M. minima, that she will have anything to do with), is grand. In spite of the fact that she has been pulling it to pieces in order to give "plant beggars" only one cutting, this plant in five years has attained the height of four feet, and is about forty inches broad. It wants a rich, porous soil, as it is a great feeder. In winter give as even a temperature as possible, and very little water. In spring before growing begins, give a top-dressing of fresh soil, put it in a light place, and water regularly when fresh growth begins. Cuttings of one year will

oftimes bloom the next. We have it to bloom as often as three times in a summer. And such blooms! They are much like the flower of the Cereus grandiflorus; it is also a night bloomer, and often called by mistake the "night-blooming" Cereus. It is one of the best plants for beginners, being of as easy culture as a geranium, and there is no reason why one should not succeed with it.

In Meehan's Monthly for August we read:—A great difference has to be made between "the night blooming Cereus" and the *night blooming Cactus*, as it is often called. The night blooming Cereus is *Cereus grandiflorus*, while the night blooming Cactus is *Phyllocactus latifrons*. The former has rope-like stems, covered with lines of small spines,—the latter has flat, frond-like stems. The latter is an interesting flower, but not nearly as interesting or rare as the former. We learn from a list published by Mrs. Theodosia B. Shepherd, of California, that the common name of the leafy form, or Phyllocactus, is "Queen Cactus," and if the botanical names are considered too difficult, and a common name desired, it would be much better to distinguish the two by adopting the California name.

Question Drawer.

Swedish Box Thorn.

751. SIR,—Can you tell me through the columns of the CANADIAN HORTICULTURIST where the Swedish Box Thorn can be obtained in Canada or Britain?

CHAS. P. MORGAN, *Truro, N.S.*

(Reply by Prof. Craig, of the Central Experimental Farm, Ottawa)

Write to our Canadian nurseryman; also Wm. Feil & Son, Hexham, Northumberland, England.

Destroying Ants.

752. SIR,—Can you give me any directions how ants may be quickly destroyed where they infest a lawn and cause the grass to have a withered appearance. If you know of any effectual remedy, I would be glad to learn what it is.

E. A. ARNAUD, *Annapolis, N.S.*

(Reply by Prof. Craig.)

Mr. Ellwanger, of Ellwanger & Barry, says, "Perforate the hills and pour in a solution of crude carbolic acid, composed of one pound of acid to two quarts of water; a gill of the liquid will suffice for an ant-hill." Tobacco insecticide soap is also efficacious. It is, moreover, excellent, when sufficiently diluted, for destroying ants where they have formed their hills in or about plants.

Currants Dropping.

753 SIR,—Can you tell what makes the fruit of currant bushes drop off the strings, leaving only three or four berries to a string? CHAS. P. MORGAN, *Truro, N.S.*

(Reply by Prof. Craig.)

Try a dressing of an artificial fertilizer containing potash and phosphates

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Grafting Plums and Pears.

754. SIR,—Please explain how I can get stumps for grafting with plums and pears, and what is the best kind. When should the grafts be cut, and how should they be saved? How do you make grafting wax? R. C., *Orangeville.*

Seedling stocks for grafting on are either purchased at about one year old, or raised by sowing either plum pits or pear seeds, as the case may be. For whip grafting these are brought in-doors in the autumn, and kept in green sawdust in a cellar not too dry. For top grafting the young trees are usually allowed to grow up until they have a trunk one or two inches in diameter. The following, by Josiah Hoopes, is well to the point:

There is no mystery about this operation. The principal point to bear in mind is that all cions must be cut before the sap has commenced flowing. The stock of almost all trees is better for being in a growing state, that is, at a season when evidences of growth may be observed by the enlargement of the buds and a slight effusion of sap when a cut is made through the bark. Although sometimes successful, the operation ought never to be delayed until the stock is in full leaf. Experienced grafters will insert cions even if the bark should be somewhat shriveled, for, to use a popular saying, "they are hungry," but the fact is, that the circulation of the sap induces a granulation at once, and the union of the stock and graft is the quick result.

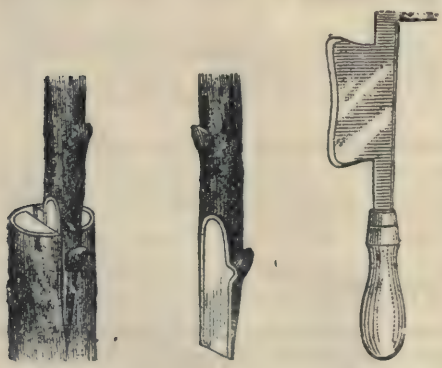

FIG. 827.—CLEFT GRAFTING.

Cleft or wedge grafting is useful on large subjects, as growing trees, say, from one-half to one and a half inches in diameter. This is one of the oldest and best methods, and consists in merely sawing off the stock, splitting it down a short distance and inserting a wedge-shaped cion in the cleft. Of course, this should be tied tightly and securely waxed to prevent the entrance of air and water. The cleft should not be too long or the sides will not clasp the graft tightly. It is desirable to have the bark of both stock and cion exactly corres-

pond to facilitate the union. On large limbs, after sawing off, the slitting process may be omitted, and in its place the bark is cut down, say from one to two inches. The cions should then be prepared with one sloping cut, making, in fact, a one-sided wedge, which should be inserted under the bark of the stock and then securely tied. Wax it carefully and rub off all suckers on the stock as soon as they appear. In the case of old trees it is best not to undertake the entire top in one season, but to let the change extend over two or three years. Should the grafts fail, a few strong shoots may be allowed to grow and budding be resorted to during the ensuing summer.

A Fumigator.

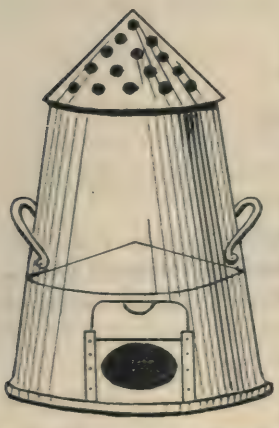

FIG 823—SMALL FUMIGATOR.

755. SIR,—I wish to get directions for making a small fumigator, which some of your readers might be able to supply. E. A. ARNAUD, *Annapolis, N.B.*

(Reply by Prof. Craig.)

I herewith enclose a rough sketch of the fumigator we are using in our greenhouse here It is made of galvanized iron and is of the following dimensions: Height, 20 in.; diameter at top, 7 in. diameter at base, 10 in. The opening at the base is 4x2 in., and is closed by a sliding door. A cone-shaped lid, perforated with one-quarter inch holes, is attached by a hinge. A grating shaped and perforated like the lid is fixed inside the fumigator 9 inches from the base.

Apples for Southern Ontario.

756. SIR.—In planting an apple orchard of fifteen acres on good wheat clay for market and profit, about thirty miles south of Grimsby, near Lake Erie, what variety would you recommend as best, growth of tree, hardiness, productiveness and quality for market considered? What do you think of King, Northern Spy, Rhode Island Greening and American Russet for my situation? I intend planting peaches between rows. What do you think of Elberta? It is an early peach in the States; is it early, medium or late in my soil and situation? Please state other kinds you could recommend on my soil, including early, medium and late. A. J. HAIST, *South Cayuga.*

The soil mentioned above is excellent for apples if well cultivated. The Spy and Greening are two excellent varieties, but the former will not yield much fruit until about fifteen years planted; the latter is an early bearer. The King is a poor bearer at any age, and scarcely pays for growing on this account. The American Golden Russet yields poorly, though much better than King. We would recommend Ontario instead of Spy, for it is as good and a much earlier

bearer, and add Cranberry Pippin to the list, a fine fancy winter apple. A few Wealthy would also add to the value of the collection. The Elberta is a fine yellow peach, coming in about the season of the E. Crawford, according to some of our southern peach growers. We have not any fruit from it yet at Maplehurst. Clay soil is not well adapted to the peach, so that the success of our correspondent with peach growing is quite doubtful.

Apples for Dufferin County.

757. SIR,—What are the best winter apples for the County of Dufferin; varieties that will come early into bearing? R. C., *Orangeville.*

Probably the following list of varieties would be among the most desirable, viz., Blenheim, Cranberry and Ontario.

The Agawam Blackberry.

758. SIR,—Is the Agawam Blackberry subject to rust more than other varieties? R. C., *Orangeville.*

So far as our own experience goes at Maplehurst, the Agawam is not subject to rust. The Kittatinny, on the other hand, is very badly affected with the orange rust, and we are in danger of soon losing our whole plantation through it.

⁂ Open Letters. ⁂

The Strawberry-Raspberry.

SIR,—This magnificent fruit is one not generally known; it is a native of Japan, and is known, botanically, as *Rubus Sarbifolius.*

In manner of growth, it is somewhat similar to our common raspberries. The young plants commence bearing when only about two inches high, and full grown bushes yield heavy crops of fruit. The leaves of this plant are somewhat like a rose bush. The fruit is of large size, a brilliant red color, and very deliciously flavored; it resembles a huge strawberry very much, and hence the name, Strawberry-Raspberry.

Being such a fine fruit and so different from all other kinds, it will be widely cultivated when better known. It can no doubt be used for every purpose that our strawberries and raspberries are put to.

In regard to hardiness, I believe it will succeed over a wide range of country.

S. L. WATKINS, *Grizzly Flats, California.*

HARVESTING AND MARKETING THE GRAPE CROP.

Picking, packing and marketing should be done systematically; careless pickers or packers cannot be tolerated. In western New York a bushel tray or box is used almost exclusively for picking. This is too cumbersome and requires both hands in moving it. We use a shallow half bushel box, or basket, which is readily handled with one hand. A good picker will gather from 1200 to 1500 lbs. per day without dropping or crushing any, and a good packer will pack 100 to 125 baskets and get them full enough so they will open up smooth and level on top with no stems in sight, but not so full as to crush the fruit in putting on the cover. Pick grapes at least 24 hours before they are packed. If picked and packed at once, they settle so the basket is only two-thirds full when it reaches the consumer.

Plan the harvest work so that full loads can be hauled to the depot each day. If the roads are good, as they should be, 400 or 500 baskets can be as readily drawn as half that number. Have the packing house cool and airy, with room and conveniences for the packers to work to the best advantage. If you ship to a commission house, don't listen to every drummer that comes along, but select two or three reliable firms and give them your fruit exclusively. The plan of forming all growers into a co-operative union has not proved a success here. A better plan is for several growers who can work harmoniously to load their own cars and ship or sell in carlots.—American Agriculturist.

WAGON SPRINGS FOR THE FRUIT WAGON.

In large commercial orchards it is well understood that the jolting of fruit when carried in the solid, springless box wagon causes injury, entailing great loss to the selling value of the fruit. The cut illustrates a simple method of arranging springs with a wagon body sufficiently sensitive for the carrying of the most delicate fruit. The springs may be made of vertical coiled wire, securely fastened to the cross piece which is attached to the under side of the body of the wagon and held in place by uprights at the ends. Fruit may easily be drawn for miles and but little bruising occurs thus supported and carried.

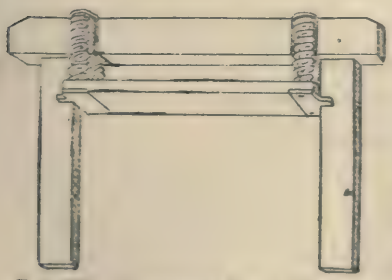

FIG. 829.—CARRYING FRUIT WITHOUT BRUISING.

THE MERRY MAPLE.

HAIL to the merry maple,
And the hills where the maple grows!
The hills that hold no tyrants,
And the hills that fear no foes!
Where the green grain grows, and the sun foretells
The harvest soon to be;
O, I would not give that maple land,
For all the lands I see!

Hail to the merry maple,
And the feast and the fireside chair!
Where hearts were warm as embers,
And the stranger welcomed there!
Where the white-winged waft of the feathery snow
Made all seem bright within;
O, I would not give that maple fire,
For all cold wealth could win!

Hail to the merry maple,
And the flag where the maple flies!
And still unstained and glorious,
May it bless Canadian eyes!
And the march men make, with that flag above,
Be such as heroes show;
O, I would not give that maple flag,
For all the flags I know!

—From Poems by W. WYE SMITH, St. Catharines, Ont.

ORCHARD OF MR. A E. SHERRINGTON, WALKERTON, ONT.

THE

Canadian Horticulturist

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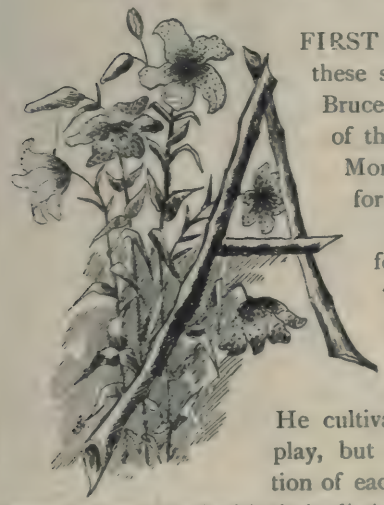
LOCATING FRUIT EXPERIMENT STATIONS.



FIRST trip made this season for the location of these stations was in the counties of Huron and Bruce. The writer, accompanied by Prof. Hutt, of the Ontario Agricultural College, set out on Monday, August 26th, taking with us bicycles for easy access to various points.

At the Agricultural College, Guelph, we found the greenhouse, the trees and shrubs of the lawn and the experimental strawberry plots objects of special interest. Prof. Hutt is certainly much to be commended for the systematic manner of his operations. He cultivates flowers not for their ostentatious display, but with the object of completing a collection of each kind, so that his students may gradually become acquainted with their distinguishing features. The plants in the greenhouse are plainly labelled, so that both student and visitor may constantly associate the plant and name and thus learn much, quite unconscious of effort. In place of the wooden labels so much in use among florists, and on which the writing is almost illegible, he uses labels of celluloid procured from the organ factory, cut about twice the size of the ordinary label, and this is supported by a label pin. On it is written in plain characters the name of the plant. The ink which Mr. Hutt uses is indelible and is made of varnish and drop-black, with a sufficient amount of turpentine to thin it for easy application.

INTERIOR VIEW OF GREENHOUSE, ONTARIO AGRICULTURAL COLLEGE, GUELPH.

The plants are in excellent condition, doing great credit to both Prof. Hutt and his florist, both of whom may be seen among their favorites in the accompanying picture of the interior of one of the greenhouses. There are six of these in all, enclosing an area of a little over 7,000 square feet, and may be thus enumerated: (1) The forcing house; (2) the propagating house; (3) horticultural laboratory for the use of students, provided with benches and all needed appliances for each; (4) the intermediate house; (5) the tropical house, and (7) the conservatory.

The strawberry plot, just in the rear of the greenhouses, contains over one hundred varieties in little sections side by side and plainly labelled for the information of visitors. The results of his experimental test will be made public through our report.

From the roof of the College building proper, a beautiful view may be had of the experimental plots of the farm, the dairy department, and the horticultural building, of which latter an exterior view is also presented to our readers.

This building includes both the botanical laboratory and the greenhouses. Here are offices and lecture rooms of Prof. Hutt and Prof. Panton, and these are furnished with every modern appliance for the performance of first class work. Prof. Panton's department is one of great value to fruit growers; he is constantly receiving plants and flowers for name, and gives ready responses to such enquiries. His laboratory for the study of microscopy is fitted up so as to afford each member of his class a separate table, microscope, and outfit. Adjoining, he has a dark room for finishing up photographs, and thus science and art are made to serve each other. Prof. Panton has just completed a work which he calls "Insect Foes and How to Destroy Them," a book which is now offered for sale at so low a price that no fruit grower or farmer need lack for the latest information on this subject.

The immense campus of about forty acres in the College front is an especial feature of the landscape, and the fine stretch of open greensward is carefully preserved according to the correct principles of landscape art, and any trees or shrubs are placed in clumps and groups in such a manner as will not conceal the many excellent views from the College.

The ribbon beds in front would deserve a detailed description, if space permitted. In one the letters O. A. C. are formed by plants of large silvery Centaurea, the dark background is formed with Achyranthes, and the border with Mesembryanthemum.

At Walkerton we paid a visit to one of the applicants for experimental work, Mr. A. E. Sherrington, a practical bee keeper and fruit grower, who is quite an authority in his own section in both these departments. He has a great fondness for experimental work, and has excellent soil for fruit growing. His situation is inland, well representing the conditions prevailing in a large portion of the county. Our frontispiece is a good representation of the central

EXTERIOR VIEW OF HORTICULTURAL BUILDING, ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONT.

driveway through Mr. Sherrington's orchard looking from the house. The situation here being elevated about 100 feet above the town, magnificent views of the surrounding country lay before us. Mr. Sherrington has seven acres of orchard, five acres of which are devoted chiefly to the Spy, Russet, Mann, Ben Davis and Greening.

He is also trying the Ontario and Pewaukee as market sorts. He has given a good deal of attention to spraying, and is also experimenting with several varieties of pears and plums. He estimates that he has about forty-five plum trees, thirty-five pear trees, and two hundred and forty apple trees. His soil is rich clay loam and chiefly fertilized with wood ashes. He attributes the productiveness of his trees to the agency of his bees, and thinks that every fruit grower should be also a bee keeper.

A great many apple trees are grown in this section of the country, and Mr. Sherrington estimates that in a good season about forty thousand barrels would be the output; Walkerton being one of the important shipping points.

Wheeling from Walkerton to Paisley we passed through much interesting country where the crops of both wheat and oats appeared to be very heavy. At Port Elgin we called upon Mr. J. H. Wismer, who so often advertises his northern grown trees in this journal. He is well situated on the lake, and his soil is light sand, and consequently easy of cultivation. Wheeling from Port Elgin toward Owen Sound, we reached the Saugeen River crossing the road in front of us, which, by its wide valley and wandering course, affords many pretty views for the camera, one of which we print to illustrate this article.

The roads through this northern country are excellent. They are sandy, well packed with stones and gravel, so good that they may be compared favorably with the asphalt of our cities. There is just one fault which cyclists find, and that is the great number of loose stones, which are not only dangerous for the wheelman, but which must also be very wearing upon vehicles of every description. Surely here is a pointer for our friends of the Good Roads Association, namely, to agitate that the roads be raked over once or twice a year, either with a hand rake, or with some road machine, in order to remove these loose stones which will not pack, and are the only blemish upon roads otherwise excellent.

The Climbing Bitter-Sweet.—The bitter-sweet vine, Celastrus scandens, a relative of the burning bush, is a strong growing vine, scrambling over trees and fences, with dark green and abundant foliage. Many trees a foot through carry a less number of leaves than this vine often does, though its stem may not be more than an inch or two thick. The clustered berries, which are bright yellow outwardly, are round and smooth at first, then the shell opens in three pieces and turns back, showing the scarlet aril-covered seeds, and now brighter than before, they light up the stumps, fences and the scraggy trees along the roadside for the most of the winter. Not many woody vines are better than the bitter sweet; its growth is rapid and its shade is deep. The berries retain form and tint indoors when perfectly dry.—Vick's Magazine.

VALLEY OF THE SAUGEEN—ENGRAVED FROM PHOTOGRAPH.

THE FRUIT EXHIBIT AT THE TORONTO INDUSTRIAL.

THE fruit exhibit at the Toronto Industrial this year was unusually fine. The apples and pears were of extraordinary size and remarkably clear of blemishes, and consequently well deserved the many expressions of admiration which were bestowed upon them by the public.

The one judge system was adopted for the first time and seemed to work well, with one exception, namely, that too much was assigned in several instances to the judges. Score cards were used by the judges for the first time, especially in cases where the competition was close. The points observed were those prescribed by the Ontario Fruit Growers' Association. For lack of a sufficient number of cards, however, the system was not carried out in full; besides it was found that score cards were adapted more to collections than to single plates.

The exhibit of the Dominion Experimental Farm, Ottawa, was very interesting, embracing a large collection of hardy Canadian and Russian varieties of fruits, and also a fine collection of native plums.

The exhibit of the Ontario experiment fruit farms was excellent, considering that it was the first attempt of the kind. The Stations have only been in operation one year, and very few of the newer varieties that have been planted at these Stations can be expected to produce fruit for a year or two yet. The varieties shown were largely those which had already been under test by the individuals selected as experimenters. The Wentworth grape Station, under the management of Mr. Murray Pettit, showed 111 plates of grapes, most of them very fine samples indeed. The Georgian Bay plum Station showed 56 plates of fruit, and the apples from that section attracted much attention. The South-Western Station, under the management of Mr. W. W. Hilborn, which is devoted to peaches, showed 80 plates of fruit. The Bay of Quinte Station, devoted to apples, under the management of Mr. W. H. Dempsey, showed 150 plates of fruit. The Secretary showed 150 plates of fruit, and Mr. A. M. Smith, of St. Catharines, 19 plates of fruit. Among the peaches from the South-Western Station was the Fitzgerald, a beautiful yellow peach of excellent quality, indeed, the flavor of this variety is most delicious, rendering it an excellent peach for dessert purposes. The tree is said to be very productive; a tree one year old in Mr. C. E. Brown's orchard at Niagara produced this season seven peaches. The Woolverton, or Princess Louise apple, was shown by A. M. Smith, and also by E. C. Beman, of Newcastle With Mr. Beman this apple gives evidence of being very productive, and he believes it will be very profitable. He has two distinct variations in coloring, one of them striped and the other with the rich blush which is characteristic of the original samples. This

reminds one somewhat of similar variations of color in the Fameuse, of which the tree is a seedling. The Dempsey Pear, Trenton, Albury, Hastings and Walter apples were shown in the large collection from the Bay of Quinte Station. The Idaho pear, as shown by the Secretary, was much smaller than the samples which have been described in the CANADIAN HORTICULTURIST. The former description was made from samples sent from Idaho, where fruits grow to a larger size than they do in Ontario. When once our experiment stations are in full operation, we hope to be able to describe all fruits from specimens actually grown in Ontario. The Brockworth Park pear and the Geneva grape were shown by Mr. A. M. Smith, who also brought quite a collection of Russian apples from the orchard of Mr. Sidney Parnell, of St. Catharines. These are more interesting because of their novelty than because of their value. Two new seedling plums were shown by Mr. J. K. Gordon, of Whitby, one of which he has named General Brock, and the other the Whitby. The former ripens about the second week in August, and the latter is a late plum. Both of these plums present an attractive appearance.

Another year it is proposed to increase the value of the experimental exhibit by arranging the varieties in alphabetical order, and also by showing in separate lots a limited number of those varieties of each fruit which seem adapted for cultivation in the locality in which the fruit Station is situated.

Care of Shrubbery.—It is well, sometimes, to repeat advice, as it is not always properly understood when first offered,—and this is especially true of matter connected with the management of shrubbery. The practice of shearing bushes in the winter time has been repeatedly shown to be as destructive to the object aimed at as it is objectionable to good taste. The proper time to prune shrubbery is after the flowering is over, then all weak and puny branches should be cut out to the ground. In cases where the bushes are low, with such plants as spiræa, for instance, nearly all those which flower in the spring should be removed, and a new set of strong shoots suffered to come out near the ground. The result is a well formed natural specimen, which will bloom profusely the following year, and yet be kept within the limited bounds desired; or if the plant is not required to be kept down to small dimensions, but a large, vigorous bush is desired, still the summer pruning should be the rule, for if the whole branch be not cut out to the ground, the vigorous upper shoots should be checked by having the very strongest ones pinched back. No amount of theoretical advice, however, will enable one to do just the right thing. Grand success must come from experience and observation. If we keep in mind that very strong shoots rob and weaken those not as strong as themselves, and that this vigorous growth is to be checked as it is going on, we get the chief element in success. All the rest must come from experience, and the rule can be applied to each particular class, according to the object aimed at.—Meehans' Monthly.

THE HAMILTON FRUIT DISTRICT.

ON the 21st of August, 1895, I stood upon the edge of the bluff overlooking the City of Hamilton towards its eastern ramparts. Near by me stood a party of tourists from Cleveland, Ohio, who were returning from the east, having visited Montreal and Toronto on the way. After gazing for a few moments on the picture before and beneath them, one of the party, a gentleman, remarked: "I have looked upon every city of importance on the continent of America, but never before have I stood upon a spot of earth that afforded so charming a prospect as this."

There are really few Canadians who know the charms of Hamilton, and few who do know them but would readily endorse and echo the sentiments of the Cleveland tourist.

But it is of Hamilton, as a fruit centre more particularly, that I would wish to speak at present. The same language applied to the city, regarding its peculiar and attractive situation, may be applied with equal force and aptness to the district lying for miles to the eastward. One may stand upon the edge of the bluff at any point between Hamilton and Grimsby, a distance of nearly twenty miles, and, looking to the north, behold as charming a panorama of garden, vineyard and fruit farm, as the city presents in an urban sense. And what lends to this highly favored fruit district a special attraction this year, is, that it is teeming with fruit, which all or nearly all other sections of Ontario were made destitute of that highly-prized product, by the terrible frosts during the month of May.

I had the privilege, during the latter part of August, of making several trips over the electric railway recently opened between the City of Hamilton and Grimsby village, eighteen miles to the east. This trip affords a splendid view of the numberless fruit farms lying between the two points named. To one interested in fruit farming, we know of no trip of the same number of miles more attractive and interesting. In many of the farms I noted vast improvements since my visit to the same district three years ago. Orchards are better kept, the fruit seems cleaner, larger vineyards planted, the soil is kept in better order, and greater care is bestowed upon the home and its surroundings. The opening of the electric line has in fact made this whole district but a suburb of the City of Hamilton, and not only the handsome homes are assuming a city aspect in their style and outward attractions, but their owners are beginning to put on city airs. To describe the farms, and the fruit upon them, lying along this trolley line, would be too great a task, and especially so since I dropped off at only a few of them. Suffice it for the present to say, that within the distance covered by this road are the farms of such well-known fruit growers as Murray

Pettit, President of the Ontario Fruit Growers' Association ; Linus Woolverton, M.A , Secretary of the same Association, his adjoining neighbor with his magnificent home ; Mr. C. E. Woolverton, Mr. A. H. Pettit, Mr. Geo. W. Cline, with his orchard of seven thousand plum trees, Mr. E. D. Smith, with his four hundred acres of nursery stock, vineyard and peach orchard ; Mr. W. M. Orr, who, I believe, sent into the market, north, the finest samples of plums shipped this season ; and several others whom we had not time or opportunity to call upon.

To all those fruit growers, the opening of the Hamilton and Grimsby electric railway and the establishment of a wholesale fruit market at the Hamilton end of the road, must prove a great and profitable boon. We had the privilege of being present at the opening of the fruit market on the 22nd of August, and witnessed the interest taken in it by the citizens of the city and adjoining fruit districts, and saw the loads of fruit coming in by almost every car during the forenoon of that day, and were most favorably impressed with the promising auspices of the inauguration. Through the courtesy of the president, Mr. W. W. Ross, and the manager, Mr. F. W. McBeth, I was given the freedom of the market, a privilege which enabled me to judge of its capacity for handling fruit, and estimate its possibilities of development as a distributing centre, to the general advantage of grower, handler and consumer. From the enormous quantities of fruit sent in daily by the growers on all sides and distributed by this market to all parts of the province, it must have already justified its promoters in their faith in its possibilities of success. To my mind, it is an enterprise that the fruit growers of Ontario, and the HORTICULTURIST, as their publication, should give every encouragement to. With such a convenient distributing centre, and more reasonable express and freight rates, the consumption of the finer fruits so successfully grown in the Niagara peninsula must largely increase in all other sections of the province.

Mitchell, Ont. T. H. RACE.

THE Bureau has never received more discouraging reports than during the present season. Apples have been a failure. The bulk of correspondents report none at all, or a dozen or two on a tree. A number hazard the opinion that a half bushel or possibly a bushel might be the average, while occasional correspondents have a generous yield to report. The best returns come from districts near the lakes. Plums are a poor crop, and so are peaches. Cherries did not do as well as usual, but they were not so badly troubled with black knot as in former years. Grapes, which were almost entirely cut off by the May frosts, put forth a second bud, and about half a crop is expected. Raspberries did well in the Niagara and Hamilton sections, but strawberries suffered from frost and drouth. There was a fair amount of wild fruits in the northern and eastern portions of the Province.—Bulletin 54, Ontario Bureau of Industries.

PROFIT OF RAISING LARGE FRUIT.

THE material composing large fruit is less costly than that which enters into the composition of small fruit. We use the terms large and small fruit to distinguish specimens of the same variety, as large Lombard plums and small Lombard plums, not to distinguish plums and cherries from grapes and currants.

Composition of Fruit.—Like other vegetable products, fruits are mostly composed of oxygen, hydrogen, nitrogen, carbon, potash, soda, magnesia, lime, phosphoric acid, and sulphuric acid. With the exception of nitrogen, potash, and phosphoric acid, all these elements are abundantly supplied by the air or the soil. A deficiency of one or more of these three substances impairs the fertility of the soil, which must be restored and maintained by compounds containing one or more of these three elements. Each crop taken off the land carries with it a certain amount of these three elements, and lessens by so much the raw material at the command of the farmer.

Let us apply these principles in reckoning the cost of producing large and small fruit of the same variety. An apple three inches in diameter contains twenty-seven times as much substance as one only one inch in diameter, but the skins, cores and seeds form a much larger percentage of entire substance of the smaller apple than of the larger one.

By a chemical analysis of the apple we find that the seeds, skins, and cores contain about twice as large a percentage of ash and five times as large a percentage of nitrogen as the flesh of the apple does. Not only is the ash of the refuse in greater abundance, but it is also richer in phosphoric acid. These facts show that the soil is more rapidly exhausted by the production of small fruit.

Injurious to the Tree.—The tree is more injured by a large crop of small fruit than by an equal weight of large fruit. The fruit tree which bears a heavy crop of small fruit makes very little growth of wood, while one which bears the same weight of large fruit makes sufficient wood-growth. Both the growth of the tree is retarded and its health is much impaired by an undue amount of *seed.*

Besides this, the raising of large fruit is more profitable because it commands a higher price in the market.

Tiverton, Ont. A. H. CAMERON.

Turnip Sprouts.—It is stated that the Swede turnip placed in comparatively warm cellars in the fall of the year will send out sprouts, which, when cooked, are equal to the best asparagus ; and, in some parts of the Old World, it is becoming a regular part of good gardening to put away a few turnips for supplying the article during the winter season.—Meehans' Monthly for October

REFORM IN FRUIT PACKING.

THE following letter to the Glasgow Citizen will be of interest to every fruit-grower in the Niagara peninsula :

Sir,—In near prospect of the annual advent of the great fruit trade, timely suggestions of improvement in catering arrangements beneficial to the great consuming public, apart from the workers and dealers in the merchandise, are appropriate and necessary.

The trade is a great one and increases by leaps and bounds every year. The article itself is wanted and annual expectations are founded upon it. The fruit is being recognized as a necessary article of family food. No other apples—for one reason or another—can be made substitutes for those of American growth. The harvest prospects of the crop in America this year are well reported of. But the barrel form (containing 120 to 140 pounds) of package shipment is a failure, and is demoralizing the trade in public estimation here.

In Canada the trade is primarily commenced by orchard contractors, and then from them in bulk of barrels to the shippers and their consignees. The former are knavish, and the latter are unconcerned beyond their computations ; and both of them are ignorant and unlearned in the wants of the people here, upon whose patronage the prosperity of the trade is depending.

In packing these barrels the contractor places a few inches of select fruit on top and bottom, while the centre is filled with any sort you choose to call them. Sampling either end is no criterion of the stock. Emptying the barrel is interminable work, damaging the fruit, and the packer's knavery has not even extenuating cleverness to show for it. The result is that brokers can give no guarantee under their hammer. Even three random barrels in a shipment lot opened is no criterion—the character of a lot being so miscellaneous in itself. Dealers hesitate to purchase uncertain stock. The broker's ledger is creeping with disputed accounts in consequence of misrepresented stock, and what is worst of all and becoming fatal to the trade is that the family man will not buy a barrel at all on account of its quantity (120 to 140 pounds), and the uncertainty of the quality throughout the barrel.

Again, there are barrels known as slacks, but as a rule these proclaim themselves to an observer, and are the result of ignorance on the part of the packing orchard contractor, who puts over-ripe fruit in the centre of the barrel. The broker generally is obliged to sacrifice such lots, but all the same the good fruit is lost to the use of man, and the inconvenient barrel package is one-half at least of the primary cause of the loss.

Now, these barrels—containing 120 to 140 pounds and costing half a dollar

each (cheap enough in themselves to the cooper, no doubt, since the evaporation of the barrel-flour trade)—could be advantageously replaced by three plain, square wicker baskets or crates, containing say 40 to 45 pounds each, and costing less money than a barrel. Such packages would be more convenient to the contractor, costing no more freight and transitage, less liable to heating and waste in respect of less bulk (the normal moisture of the ripe apple being about the same as that of the potato); but, over and above all, such packages would be more convenient for family purchase and use, and the broker, dealer and consumer could all see and guarantee what they were dealing in; and the trade would then become a household word and the fruit a household article beyond limited consumption, because every family can eat cooked apples, and every land lessee in Ontario would grow apples, and find better financial results than by growing wheat.

Of course, there are diversity of trees and fruit upon them in every orchard, but the careful selection and appropriation of these would depend upon the honesty and skill of the contractor's inspector, under, say, three designations: of table, cooking and boiling apples; and were these packages thus carefully manipulated and marked by an inspector or contractor's name or trade-mark, they would soon be well known and eagerly sought after on arrival at any port, with full remunerative advantage alike to shippers, consignees and the general public.

The bazar merchants and brokers would do well to turn their usually energetic attention to these suggestions; because if they supinely overlook the wants of the public, there are others who shortly will not overlook them. I believe there are one or two enterprising persons already in Canada this season educating the packers for this or other markets, and thus this great trade, for which Glasgow might be the chief center, may pass away from it, notwithstanding its superb steamship and other advantages, to Southampton, Liverpool, or elsewhere. I am, etc.,

Glasgow. JOHN MACLEAN.

Pruning Trees at Transplanting.—It should not be forgotten that the branches of trees have varying degrees of vital power. Strong, vigorous, healthy branches would endure unfavorable circumstances when the weaker ones would give way. In growing trees, it is always the weaker wood which we find among the dead branches. In transplanting a tree, we want all the branches that are full of life and vigor, and not those that are already half-dead. The practice generally followed, therefore, of shortening back the strong, vigorous branches, and leaving the half-dead ones, is a mistaken course. If all the half-dead branches were cut away, and the stronger ones left without any shortening, transplanting would often be more successful than it is.—Meehans' Monthly for October.

NEW PROCESS FOR KEEPING FRUIT FRESH.

(Extract from Consular Reports, Washington, D.C.)

THE great difficulty experienced in preserving fruits in their natural state is such that the dealers who make the attempt of furnishing them out of season are compelled, on account of the heavy losses they sustain, to sell their goods at prices which render it impossible for the great majority of families to place fresh fruits on their tables during the winter months. The high prices which fresh fruits command on the city markets increase day by day from the time they are gathered, and have induced orchard and vine owners to run many risks in order to keep their fruits as long as possible before offering them for sale. And it is not surprising that no pains, efforts, and sacrifices are spared to reach the coveted result, when it is known that during these last years, first-class grapes sold from 2 to 4 francs (38.6 to 77.2 cents) per kilogram (2.2 pounds) from September to November, that they were worth 8 francs ($1.53.4), and as much as 12 francs ($2.31.6) in February and March, and 14 francs ($2.70) in April and May.

These exorbitant prices show plainly how imperfect are yet the means employed for keeping fruits fresh, how few must be the successful efforts and how many the difficulties encountered. The solution of this question is, therefore, of great interest to all, and the result of the experiments made in the latter part of the year 1894 and lately reported to the Horticultural Society of Soissons, by Mr. A. Petit, chief of the laboratory of horticultural research at the National Horticultural School of Versailles, deserves the attention and consideration of fruit growers throughout the United States.

Impressed with the powerful action of alcoholic vapors on the mold which generally appears on the surface of fruits in a damp atmosphere, Mr. Petit noticed that pears and apples kept for several months in a surrounding saturated with vapors of water and alcohol, even were they at the beginning in a state of decay, showing no signs of mold, while fruits in every particular identically similar to the former, stored under the same conditions, but not exposed to the action of alcoholic vapors, were entirely covered with it.

Taking advantage of this observation, Mr. Petit applied the principle to the preservation of fruits in general, and most particularly to grapes, because, more than others, the latter are subject to mold. It was to be foreseen that grapes kept, from the day they are cut off the vines, in an atmosphere saturated with vapors of water and alcohol, would, by the retarding of the sweating period, not only remain free from mold, but would even retain their natural aspect. Consequently, should the temperature be constant and low, the preservation could be maintained long and well.

On the 31st of October, 1894—that is, very late in the season and at a very unfavorable time—Mr. Petit placed, with other fruits and a bottle filled with 100 centimeters (61 cubic inches) of alcohol at 96°, some bunches of grapes known as "Chasselas de Fontainebleu," fresh from the vine, in a brick recipient in the form of a parallelopiped, cemented inside and closed as hermetically as possible by a common wooden door. In two similar recipients contiguous to the first, one of which was kept open and the other closed, but without alcohol, were stored similar fruits from the same trees and vines. The fruits were laid on wood shavings. The recipients were built in a very damp cellar, the temperature of which varied regularly from 10° to 8° C. (50° to 46⅖° F.) during the whole time the experiment lasted.

On November 20, the grapes placed in the recipient left open, and especially so those in the closed recipient without alcohol, were mostly rotten and covered with mold and were immediately removed. In the recipient containing the bottle of alcohol, the grapes were beautiful; on one bunch, two grapes had turned brown, but were firm, full, and free of mold; they did not taste at all sour, thus differing essentially from moldy grapes, especially those subject to *Penicillium glaucum*. The hair hygrometer in the recipient registered 98°. On December 7, the bunches of grapes in the recipient containing the alcohol had kept their fine aspect; on most of them, however, one or two grapes had turned brown and were in the same condition as those above referred to. On December 24, same results; on most of the bunches could be seen one or two grapes commencing to decay. At the end of nearly two months, each bunch had lost but from two to four grapes each and all were in a perfect state of preservation, the stalks being perfectly green and the grapes firm, full, and savory, and having all the qualities of fresh-cut grapes.

At the conclusion of the experiment, 28 cubic centimeters (17 cubic inches) of alcohol at 60° remained in the bottle out of the 100 cubic centimeters (61 cubic inches) at 96°, but, as Mr. Petit remarks, the door of his recipient had not been built with great care and did not close hermetically, hence a useless consumption of alcohol.

This process offers many advantages. It is simple, easy of application, and cheap, and, if adopted by our fruit growers, would allow them not only to hold their fine fruits until they can dispose of them at a fair price, but would also insure them handsome profits during the winter months.

HENRY P. DU BELLET,
Rheims, France. *American Consul.*

Grafting Apples and Pears on the Hawthorn.—Fashions go and come in Horticulture as in other things, and the same idea comes up and down with every ebb and flow of fashion's tide. The apple and pear will graft on the hawthorn. They keep dwarf, and bear early when so grafted. For a few years the nurseryman sells all he can raise, then for a few years he burns them all. Just now the inquiry for them seems on the rise again—for about the fifth time during the last fifty years.—Meehans' Monthly for October.

GOOSEBERRY QUESTIONS ANSWERED.

THE following questions have been received from different persons, and answered by mail, but as they are important to gooseberry growers in general, I offer questions and replies for publication.

(1) "*Do you recommend fall planting, and why?*"

I prefer to plant in the fall, because the gooseberry is often in leaf before the land can be got upon in the spring, and I have always found the bushes did better.

(2) "*What kind of soil is best adapted for raising gooseberries?*"

I find a soil composed of sand and clay, mixed by the action of water, and also a heavy clay soil, both yield large crops of fine berries. So also do a few bushes in a yellow loam five feet deep, but they have been treated liberally with hard-wood ashes and stable manure.

My bushes are planted 6 × 4 ft., and I keep the Planet Horse Hoe running between roads about every seven days—less might do. Between bushes I use a shove hoe made so from a piece of an old cross-cut-saw. Any handy blacksmith can get one up. They are very handy for working under large bushes.

(3) "*What kind of fertilizers do you recommend?*"

Stable manure and hard-wood ashes, and you need not be afraid of putting it on thick—it will pay to do so. I used some nitrate of soda last year, and was so pleased with the results that I am using it more liberally this year.

(4) "*Would offal from a tannery be suitable?*"

Being animal matter, I presume Yes, but I should prefer to compost it with stable manure before using, or even with muck or mould.

(5) "*Do you grow on a single stem?*"

I prefer the shrub form, because of the necessity of renewing the wood at least every three or four years. After about two or three good crops, the wood becomes hide-bound, and the fruit runs small. So after two good crops, I cut away the old wood, and have new wood to take the place of that cut away. I strive to have about six stems.

(6) "*Would you advise planting extensively of Industry, Autocrat and Whitesmith?*"

The first two, no! Whitesmith is a noble berry, and where spraying is practised will be satisfactory. For one's own use for eating ripe it is hard to beat the Autocrat, but it has an unfortunate habit of dropping its leaves early, and I fear will never be a very profitable berry.

(7) "*Give your system of pruning?*"

Clear away underneath. Thin out the head so that the hand can be easily inserted in all directions. This will allow of a free circulation of air. Cutting-in I do not practise much, as it induces an abundant growth of weak shoots which thicken up the bush during summer. I prune in the fall last thing.

(8) "*Are not Queen and Chautauqua very nearly alike?*"

Yes, Queen and Chautauqua are very much alike in foliage, vigor, and in shape, size, and appearance of berry, but at this writing Chautauqua shows just a little disposition to drop its leaves, as you remark, but nothing serious. Queen is as green as a leek.

(9) "*The most prolific berry?*"

Champion is the most prolific berry that I have tested so far. It is enormously productive and vigorous, but not any improvement on size on the Pearl, which for vigor is hard to beat. Red Jacket is its equal in this respect, but I cannot yet pronounce upon its productiveness.

(11) Yes, it is apparently "an American production." I am of the opinion at present that it is a native or it may be a seedling of some English variety.

(11) "*What varieties would you recommend for extensive planting?*"

Taking into consideration the price of stock, I would take Downing for main crop, with Pearl in less numbers, on account of higher price. If these varieties are sprayed for rust, heavily manured, and renewed as described above, they are fine berries. I should also get a more limited number of Champion, Triumph, Red Jacket, and Queen, and propagate them. Another point is, I would watch carefully the reports of the experiment stations, as there are quite a number of very promising novelties being tested, and some one of these may be the ideal berry.

(12) "*Have you any success in propagating from cuttings?*"

By the ordinary way it can't be done successfully. Layering will be found much more satisfactory. In a wet, warm time shoots, not suckers, will root in two or three weeks.

(13) "*Cause of Downing dropping its leaves prematurely?*"

I do not find the Downing to have this habit now. Some years ago when I did not spray, and gave but little cultivation, it had that habit, but now the leaves stay on till killed by frost. This I attribute mostly to spraying, but cultivation may be a factor.

All questions cheerfully answered through medium of this journal, or privately, when necessary.

Gooseberry Experiment Station, Nantyr. STANLEY SPILLETT.

THE FAILURE OF THE FIRST EXPERIMENTAL SHIPMENT.

LIVERPOOL, September 21st, 1895.

L. WOOLVERTON, ESQ.,
Secretary Fruit Growers' Association,
Grimsby, Ontario.

DEAR SIR,—My cable of the 17th inst. will have prepared you for a very disappointing return from the trial shipment of fruit.

I enclose the broker's report of its condition on arrival, and also a list of the sales so far effected of the remnant that was found to possess some value. The prices obtained, you will observe, were, as might be expected, for the most part only nominal. The apples were the only part of the shipment in fair condition.

Both the brokers and myself complained to the Allan Company, and they immediately cabled their representatives in Montreal that the fruit was spoiled through defective arrangements and also sent particulars by mail It seems that an insufficient supply of ice had been placed in the cold storage compartment, hence the disaster. The fruit was quite warm to the touch after its removal from the hold. I went down to the ship, just as the unloading was completed, and my hopes at once sank when I saw the piles of wet boxes on the quay. Many of them were opened in my presence and their contents presented a deplorable spectacle.

The tomatoes in many of the boxes had literally dissolved, so that nothing remained but a mass of skin and seeds.

The grapes were all wet and separate from the stems.

The plums were in a state of decomposition, though still showing some signs of their original bloom and beauty.

The peaches were simply transformed into lumps of black rottenness.

The pears also suffered severely. Out of several boxes examined, there was not a single perfectly sound fruit. Some were completely decayed and others had retained their form and color in perfection, but collapsed on the slightest pressure and found to be internally bad.

It is a great disappointment to all concerned that, what was allowed by all who saw it, to be a very fine collection of fruit, should have turned out so unfortunately.

Personally, I had been looking forward to its arrival with the keenest interest and was prepared to utilize it to the fullest possible extent, as an important and valuable advertisement of the resources of the Province generally, and of its horticultural wealth and capabilities in particular. But of course the arrangements I had made to this end were completely frustrated by the disheartening state of the shipment. I also feel great sympathy for yourself and the other gentlemen acting with you, in the disappointment you

will naturally feel at the result of your efforts to extend a most interesting and important branch of provincial trade.

Whether it would be worth while repeating the experiment again this season, it is not for me to say. But I may remark that the present season is less favorable for such shipments than for several years past, the market here being supplied with an unusual abundance of home-grown and foreign fruits of nearly every kind.

An important point to be borne in mind in preparing future shipments of a similar kind, is to have the packages of uniform size and shape. Also that it would facilitate the sale and improve the prospects of a satisfactory result, if the packages were all under one mark.

Owing to some difficulty and delay in getting the freight measurement from the S. S. Company, the account sales could not be got ready for this day's mail, but they will be forwarded in the course of a few days.

I remain, yours truly,

P. BYRNE,

Agent for Ontario.

(Copy of a letter from Woodall & Co., enclosed.)

LIVERPOOL, September 19th, 1895.

MR. P. BYRNE,
Agent for Ontario,
Liverpool,

Canadian Fruit ex "Mongolian."

DEAR SIR,—We regret exceedingly that the above turned out exceedingly wasty, the bulk of it being so rotten as to be entirely worthless, and it is certain from this and previous experience, that this vessel's refrigerators are absolutely unsuitable for the carriage of fruit, and, we fully believe, that had it come in the hold of the steamer, it would have landed in better condition.

On landing, we drew the attention of the wharfinger to the condition of the fruit, and made representations at the office of the steamship Company.

We beg to hand you herewith, note of prices obtained for what little was salable, but, as you are aware, even these, as regards the pears and grapes, were in a deplorable condition. We hope still to get a few oddments, and will let you have account sales tomorrow.

Under the circumstances, we thought the least attention drawn to the fruit, in the way of advertising, the better, as the condition of this shipment would undoubtedly prejudice any further experiments, which your friends might make.

The condition of the apples was good, whilst all the peaches and plums were absolutely rotten.

We strongly dissuade shipments of Canadian grapes, as the flavor is not appreciated in this country.

We shall let you have a full complement of printed catalogues, when rendering account sales.

The following is a general report of sales :

Pears, 38 boxes, wet, at 7*d.* per box.
" 32 " " " 5*d.* "
" 29 " " " 1/9 "
Grapes, 55 cases, containing 8 boxes each, at 4*d.* per box.
" 73 " wet, " 8 " " 3*d.* "
Apples, 10 " at 3/ per case.
" 2 " (1 open, 1 sample), at 2/ per case.

We remain, dear sir, yours truly, WOODALL & Co.

FALL PLOWING AND FERTILIZING.

THERE is no practice that is so beneficial on clay soils, and in a cold climate, as fall plowing of the ground. While in a mild climate, and in a sandy soil it is the worst of practices, there is nothing that gets the soil into such a good condition, where the land is locked by frost all during the winter months. Not only does fall plowing put the land in such localities in a mellow and friable condition, but it enables the farmer to get ahead of his less thoughtful neighbors with his work in the spring. It is found, too, that certain forms of fertilizing matters can then be more profitably applied than if their application is deferred until the opening of spring. This is particularly the case with the crude forms of potash salts such as kainit. There are certain forms of plant food that one need not fear of their getting away from him in the soil. While it would be imprudent to use the more available forms of nitrogenous fertilizers in the fall, even on fall planted crops, the case is entirely different with the phosphoric acid and potash salts. These will remain in the soil until some plant calls for them. In using the crude forms of potash salts, like kainit, there is frequently difficulty in using them freely in large quantities when applied at the time of planting in the spring, on account of the large percentage of chloride of sodium associated with them. But if they are applied in the fall, the action of the chloride of sodium may be of benefit in rendering soluble matters of plant food in the soil, and the potash has time to get completely incorporated with the soil. On sod land that is to be planted in potatoes in the spring, in a climate like Canada, where it is often difficult to work the land as early in the spring as is desirable for this crop, the practice of turning the sod just before the final freeze-up, and at that time applying in the form of kainit most of the potash needed, will be found one of the most economical and profitable that can be adopted. This too will be found the best time to deepen the soil by deeper plowing. An amount of the raw clay sub-soil may at that time be brought to the surface that would be detrimental if brought up in the spring. The winter freezing will put it all into such a friable state that no harm will result, but only good.

It is well known to all cultivators that no crop requires more liberal application of potash than the Irish potato crop. Some contend that the sulphate is the best form in which it can be used on the potato crop, but experiments at the New Jersey Station showed that the chloride or muriate gave the best results. But if we use kainit as the source of potash for the crop, we have not only the chlorides but the sulphates as well, and in addition we get the magnesia, which is also useful. The Southern market growers, who use potash salts in a lavish manner on the potato crop in the spring, use generally the muriate, as all their fertilizers are applied directly to the crop at the time of planting, which is

months in advance of the time for planting in Canada, and they could not use kainit at that time in large enough doses to give all the potash that they need. But with the Canada planter the case is very different. His crop is planted much later, and is to be grown all during the summer, when the conservation of moisture in the soil is one of the most important matters to be considered in connection with potato growing. It is a well known fact that kainit tends to conserve moisture in the soil. Hence it is desirable to use it in places where the crop grows through the summer. But, as we have said, the application of the needed quantity in the spring may be for the time being detrimental to the crop, we can see the importance of applying at least a large portion in the fall at the time of breaking the land. The Southern growers of the early potato crop use on an acre 200 lbs. of actual potash. To get this amount in the form of kainit would involve the use of over 1,600 lbs. of kainit per acre, a larger amount than could be safely used directly on the crop in spring. But it will be found of great advantage to apply half of the needed potash as kainit in the fall, and supply the remainder as muriate at the time of planting. Another crop in which the plow should play an important part in the fall is the asparagus crop. Here the plow should be used to ridge up the soil sharply over the rows, leaving drainage furrows in the middle between the rows. These sharp ridges warm through much earlier in the spring than flat land, and the earliness of the crop is much enhanced. The old practice of using salt on asparagus was not entirely without good reason, but we have found a better way, by which we get all that the salt can do for the plant, and at the same time give it the potash it needs. This is by using kainit very liberally in the fall. I have used full half a ton per acre with decided profit. We spread it over the land before the fall plowing, and then plow the ridges up over the rows of plants and get the salts right where we want them. Then a dressing in the spring of manure or of some nitrogenous fertilizer will result in a growth of asparagus that is seldom seen without the fall ridging up and the heavy dose of potash. In the preparation of the soil to be used in the cultivation of lettuce under glass in winter, we use the more concentrated potash salts in the form of muriate, and never as kainit. In fact we seldom use kainit as a spring application, but believe in it as an autumn application for spring crops.

W. F. MASSEY.

Crimson Clover has now been successfully grown in all parts of the Union with the best results, and is no longer an experimental crop. It is good for hay, will yield two to three tons per acre, is valuable for seed, which it produces in large quantities, is good for fall and early spring pastures, and is the only clover that remains green all through the winter, but its greatest value is in its ability to store up plant food, and at the same time send down deep feeding roots far in the subsoil, and bring to the surface elements of fertility that would be otherwise lost. Crimson clover is an annual, and must be sown in its proper season. This extends from the 1st of August until the last of October. About ten quarts of seed is required to sow an acre.—Western Plowman.

HOW TO PACK FIRST-CLASS APPLES.

ILL you please give a description of the best plan of an improved fruit-packing house and stationary barrel press to use in it, and any other utensils for filling baskets, kegs, barrels, crates, etc.? I have a large orchard in Canada, and wish to have the very best conveniences for putting up the fruits in the best possible way to sell for the highest prices, whether the markets are glutted or not.—F. W. W., Chatham, Canada.

Ans.—I would build a packing house somewhat after the general plan used by the orange growers of Florida. Either by building on a hillside or slope, or by bridging or grading, I would arrange to unload the fruit in the second story of the building. I would empty it into a shallow, padded-bottomed, fan-shaped hopper, slanting downward into the first story, and inclined just enough to allow the fruit to roll along, and not pile up as it run into a sizer or grader, one end of which adjoins the lower and narrow end of the hopper. I would build the hopper ten or twelve feet wide at the top, converging to about one foot at the lower end, and fifteen or twenty feet long, large enough to hold a wagon load of fruit.

The sizer consists of two inclined, nearly parallel strips of wood, diverging somewhat. It allows the smallest fruit to drop through first, the intermediate sizes next, and the largest fruit roll off at the end. One can make any number of grades or sizes desired. Oranges are usually graded to seven sizes—three or four would be sufficient for apples. A man standing where the hopper joins the sizer, can sort out all imperfect fruit as it rolls along. Shallow bins underneath the sizer, also inclined sideways from the sizer, will convey the fruit directly into the crates, baskets or barrels, thus taking advantage of the attracting of gravitation, avoiding all lifting and carrying.

Carefully pad all places where there is a fall of more than a few inches, with sheepskin, cotton or wool. A long, low, narrow truck with iron axles and wheels, as wide as a barrel and long as the sizer, could hold the barrels while they are being filled, and then be easily and quickly placed under the stationary press. They may then be drawn to the storage room or car, headed, nailed and stenciled, without removing them from the truck, while another truckload of barrels is being filled. Have the floor of house level with the wagon box, or car floor, if the packing house adjoins the railroad, for convenience in loading.

I have never seen a stationary press for apples, but I think I could contrive one. It would be a modification of the lever press, worked with the foot, now in general use in this section. The screw press takes too long to operate.

If Mr. W. wishes to put his fruit up in extra fancy packages, so as to "sell highest and sell anyway, whether the market is glutted or not," let him add to

his outfit an orange wrapping machine, which will wrap in tissue paper, stamp his name and address on each wrapper, and place in crates or barrels, 60 apples, pears, peaches or quinces per minute. If he start back in the orchard, growing fine, highly-colored fruit, pick with care, and pack as I have indicated, I think the fruit will sell.—E. C. GILLETT, in Rural New Yorker.

OUR AFFILIATED SOCIETY AT WATERLOO.

IT is most gratifying to receive such encouraging accounts of the meetings held by the new Horticultural Societies which were inaugurated last spring, through the visits of our director, Thos. Beall. It is becoming more and more evident that the new plan of operation, by which each member shares equal advantage from the treasury, and where the supreme object is the cultivation. The following description is taken from a local paper:

"A stranger in town last evening, Aug. 27th, might have fancied that some big fete was in progress from the crowds wending their way to the Town Hall, but if he would have joined the procession and entered he would have been surprised and delighted at the sight. Three days ago the officers of the Horticultural Society proposed holding a free exhibition of flowers, fruit and vegetables. The idea took like wildfire—all classes joined, and the results exceeded the expectations of the most sanguine of its promoters. Rarely in any city or town could such a display be made or such an enthusiasm created. The hall was well arranged, and the cultivated eye and good taste of the ladies made the tables a symphony in color. Gladioli and asters were shown in greatest numbers, and in these lines no show we have ever seen could surpass them. We are sorry that space prevents more than a mere mention of the fine exhibit of sweet peas (Eckford's Best), gloxinia, verbenas, phlox, begonias, cannas stocks, delphinum, and many other cut flowers, while palms, auracarias, ferns and foliage plants made a rich contrast and a fascinating sight. A magnificent specimen of Lilium Auratum was the centre of attraction, its rich perfume enjoyed by all, and a collection of rare and curious cacti also formed an interesting feature of the exhibition. The hall was filled during the evening with a delighted lot of spectators, and all declared the Town of Waterloo Horticultural Society a necessary and permanent institution of the place. Judging from the smiling countenance of the genial President, Mr. Lockie, he must be the most popular man in town."

GRADING APPLES.

IT is not so easy to arrive at a proper standard for sizes and quality of fruit, for the reason that sizes and qualities of the same varieties vary considerably in different sections and in different seasons. The standard adopted by the Association will come as near to properly covering the ground as is possible without naming all varieties of apples, and it is recommended to your favorable attention. That the grade No. 1 shall be divided into two classes, A and B. That the standard size for class A shall be not less than 2½ inches in diameter, and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening, and other varieties kindred in size. That the standard for class B shall be not less than 2 inches in diameter, and shall include such varieties as Romantine, Russets, Winesap, Jonathan, Missouri, Pippin, and other varieties kindred in size. And further that No. 1 apples shall be at time of packing practically free from the action of worms, or defacement of surface, or breaking of skin, and shall be hand picked from the tree.

This standard does not prevent any grower who may have good apples below the standard of size in either class from marketing them for what they are. Occasionally, some really choice fruit might run below this standard, but the exceptions are so rare that there can be little objection to the standard as fixed.

These suggestions are to the interest of every intelligent, capable apple grower. It may not suit his shiftless neighbor, when he finds that his neglected fruit will not grade as No. 1. But that class has no legitimate place in the industry. To increase the consumption of apples, the consumer must be pleased, and nothing will tend to that end so much as to furnish with a better, rather than a poorer apple than he expected when he made his purchase. Let the barrel branded No. 1 be not only No. 1, but *fine;* and let the purchaser find the barrel branded No. 2, not cider apples, but good fruit. Each barrel sold under this plan will make a customer for two more, and a crop of apples cannot be raised in this country too large to sell at fair prices, and that without going to Europe for a market for the surplus.

It may be too much to hope that all that is outlined can be accomplished this year, but by co-operation a long step can be made toward it. One thing is sure this big crop year, the grower who most closely follows the suggestions will be the man best satisfied with the results of his year's work.

The Association is especially anxious to have growers understand that the prosperity of both growers and legitimate dealers are bound up together. Anything advancing the interests of one is for the benefit of the other, and for that reason it urges hearty co-operation between the two interests, to the end that the apple trade may be further extended upon a sound basis with a reasonable profit to all concerned. The apple is the king of fruits, and its use can be greatly enlarged by honesty in all dealings and intelligent organized effort upon the part of growers and dealers.—Fruit Growers' Journal.

PLANTING TREES AND SHRUBS IN FALL.

OW is a capital time to plant evergreen coniferous trees, also rhododendrons, kalmias, andromedas, azaleas, tree box, hardy heaths, and other plants of the kind that keep good balls of earth with lots of fibres to their roots. They should be well soaked before they are put into the holes, and before finishing filling in the dirt about them give a reasonably good watering. Do not water on the surface of the ground, as it crusts the earth and prevents a free penetration of rain and air. Don't plant coniferous trees, as pines, firs, spruces, or arbor vitæs, more than one or two inches deeper than they were before ; of course the size of the plant has a good deal to do with this, big trees can bear a little more depth than small ones.

Don't overwater conifers. Thousands of young plants are killed every year by constant watering ; it rots the roots and death ensues. Rhododendrons, azaleas, and the like can stand more water than conifers, and it is very important in their case to have the ball of roots thoroughly soaked before being planted. For the winter mulch about the plants with leaves or long manure ; we generally use salt meadow hay ; but do not apply it till the ground is frozen about the plants. The great advantage of planting now is that the hot weather is practically past, the nights are long and cool, there is a dew to recuperate the plants from the fatigue of the day, and the ground is warm enough to induce good root action. The result is that next spring the plants are apt to start off into growth more as if they had been established than recently planted specimens.

From the end of September and early in October, most fibrous rooted trees and shrubs can be transplanted with excellent success. In the line of trees I may mention maples in general, horse chestnut in variety, catalpas, and poplars ; and in the way of shrubs, clethra, euonymus, deutzia, mock orange or syringa, forsythia, hibiscus, hydrangea, hypericum, spiræa, weigelia. But trees and shrubs that have long or naked roots or are growing late should be planted after the first black frost.—Gardening.

Mushroom Culture.—Many American florists have found that they can combine raising mushrooms and flowers for cutting in the same houses, and in this way make a double profit from the same amount of glass. Usually, these combined houses have been roses and mushrooms, or carnations and mushrooms ; but even the vegetable growers are now finding that they can get double crops in this way. In many parts of our country, it is found very profitable to raise tomatoes under glass ; and it is found that tomatoes and mushrooms go very well together.—Meehans' Monthly for October.

PRUNING THE GRAPE.

I HAVE been in the habit of pruning and covering up all kinds alike in the fall of the year; and usually leave two buds of each rod on the arm. But I have noticed that in some, particularly the white variety, many of the stubs die, while the vine lives and grows strongly the next season. But not growing, as stated, in many instances from the stubs of the previous season, or for some other reason, bear very little fruit. I refer more particularly to Rebecca, Moore's, Diamond and Eldorado. Even the Duchess, with all her grace, shows sensitiveness to pruning. With regard to fruiting I do not speak of this season's results merely, as the severe frosts of May almost wholly destroyed all kinds of fruit in this vicinity.

In this connection I may state for reflection the experience of a friend of mine who found no time last fall to pay any attention to his vines, but left them entire on the trellises all winter, and did not expect any good from them this summer; but is gratified now to find his vines better fruited than they have been for years past. One explanation may be, that the vines having been so chilled and dried up by the frosts of winter, they were slow coming to in the spring, and so escaped the damaging effect of the May frosts which did so much damage all around.

Ottawa, 1895. M. MCKINNON.

The experience of our correspondent in not pruning his vines in the autumn before laying them down, would seem to indicate that the vines are rendered somewhat more sensitive to frost from the late fall pruning. Probably better results would be obtained by less pruning in the autumn, leaving longer fruit spurs and more fruit buds, and, if necessary, cutting a little closer after the frosts of winter are over.

NOVELTIES.

A New Black Seedling Grape originating with Mr. M. A. Read, of Port Dalhousie, Ont., was awarded the first premium at the Industrial Fair, Toronto, this season, as best seedling grape. Its season of ripening, which is said to be about that of the Champion, at once claims attention. According to the originator, the vine is a vigorous grower, with heavy foliage similar to Concord, very heavy, and very productive. The bunch is large, well shouldered, very compact; and the berry of fair size, firm, black, and of good flavor. A basket of these grapes has been sent us to verify this description. The grape promises to be a profitable, early black grape.

THE CAULIFLOWER.

Directions for Serving the Cauliflower.

CABBAGE or cauliflower, unless taken directly from the garden, is much improved if so placed that it can absorb water through its stalk for twelve to twenty-four hours before cooking. Soak a cauliflower, head down, in cold salted water for an hour before cooking to draw out any insects that may be concealed. A small cauliflower may be cooked whole and should be placed in the pot with the flowerets up, as the stalk needs the most thorough cooking; a large head should be divided into six or eight pieces.

Cook in a kettle of rapidly-boiling salted water, to which may be added one-fourth of a level teaspoonful of soda. (The soda aids in softening the woody fibre.) The kettle should be skimmed occasionally while the vegetable is cooking, or, to save trouble, some prefer tying the cauliflower in a thin cloth. An agate or porcelain-lined kettle is preferable to iron, which is likely to discolor the cauliflower.

The odor is less noticeable if the kettle is left uncovered. The water may also be changed to dispel the odor. A cauliflower should be tender after twenty to thirty minutes of rapid boiling. If over-cooked it appears soggy and water-logged.

A good cauliflower, well cooked, requires little additional flavor beside salt and good butter. Some, however, prefer the addition of grated cheese. The cauliflower may also be served as a garnish for meats, in sauces, soups, and is excellent cold as a salad. Many prefer it with a thick cream sauce.

"Cold boiled cauliflower is very good fried plain in butter, or breaded and fried, or mashed and fried like oyster plant, with the addition of an egg and a palatable seasoning of salt and pepper."

The last paragraph is from Miss Carson's Practical American Cookery. Many other hints may be obtained from this and other leading guides to cookery.

Varieties of Celery.—Celery, to be good, has to be perfectly blanched, and the blanching process is accomplished generally by heaping the earth around the stalks. For this reason the short bunchy varieties of celery are more advantageous than the taller-growing kinds, as requiring less labor in earthing up. It is chiefly for this reason that the thick dwarf kinds are in favor with American gardeners, as requiring less labor to produce. Some of these, however, are not nearly as toothsome as the taller varieties, and the efforts of the improver should be towards producing sweet, nutty-flavored varieties of the dwarf kinds.—Meehans' Monthly for October.

RASPBERRY GROWING.

FOR the benefit of those who have not yet tried it, we would say that a moderate amount of shade makes raspberries better. The slight shade of trees have made our vines grow more thriftily and the berries larger. The size of the crop has not been diminished at all by the shade. Not only do the vines produce more in bulk on account of the large size of the berries, but in many instances they will yield a larger crop in numbers. After fully proving this matter to my satisfaction, we planted the raspberries in the cherry orchard. The trees afford fair shade to the berries part of the day, and they are kept trimmed up to seven and eight feet from the ground. The results so far have been eminently satisfactory. Both cherries, of good quality, and a fine crop of raspberries have been cropped from the field for two seasons now. We see no reason why they should not continue to yield so in the future. The general theory is that large trees sap out the nutriment from the soil, and rob the berry vines that are planted under them. But we can add plenty of manure to keep both vines and trees well supplied with nourishment. Some of our orchard trees fail to get enough fertilizing, and it may prove a way of inducing farmers to give more attention to their fruit trees.

Here are some notes taken from our book for this season. A piece of land about two hundred feet square is planted with 2,500 hills of raspberries. We prefer the hill system. The hills are four feet apart each way, with five to six canes left growing in each one every year. All of the rest are cut out in the fall. On this piece of ground we averaged three good quarts to the hill, and the season was not very favorable. Other years we have averaged four quarts to the hill. At ten cents a quart (and many times we received twelve and fourteen), the berries from that land of less than an acre in extent brought in $750. The cost of picking, manuring and cultivating is no greater than for strawberries, leaving the margin of profit largely on the side of the raspberries.—Rural American.

The Australian Apple Box is similar to those in which California oranges are packed, says the Fruit Trade Journal, outside measurements being 14½ by 27½ inches, and 8 inches deep, with one division through the centre. The heads of the boxes and the divisions are made of ¾ inch stuff and the sides of ⅜. The gross weight of a box filled is 50 to 54 lbs., and is supposed to contain about 40 lbs. net, with each fruit wrapped in paper. As a rule the apples reach London in good condition. Much depends upon the attention given to the refrigerator, for the apples are almost as much injured by excessive cold as by getting heated. Each steamer employed carries 10,000 to 20,000 boxes, the mail steamers of the P. & O. lines taking about 42 days in transit *via* the Suez Canal and Mediterranean Sea.

FORCING TOMATOES.

Now is a good time to sow seed for a succession crop of tomatoes, so that the plants may be well under way before the days become too dull and dark. Some growers still adhere to the practice of striking cuttings in place of growing plants from seed, but the seedlings are no more trouble and are in many ways preferable. The plants when large enough should be pricked singly into three-inch pots, and again into five inch pots as they require it, using a compost of three-fourths fibrous loam and one part leaf-mold and pulverized sheep manure in equal portions. They should have a light, airy position, and be placed well up to the glass to prevent them becoming drawn. They may be fruited in pots or boxes or in a bed, but boxes are preferable, and will in most cases be found the most convenient. A very suitable and easily handled size is eighteen inches long by twelve inches wide and nine inches deep, which gives ample room for two plants. The boxes should be filled only two-thirds of their depth at first, the other space being left for a top-dressing as the plants require it. They must be carefully and regularly watered, and there will be no necessity for giving liquid manure until after the fruit is set, when they may have a weak solution applied about twice a week.

The plants should be trained to a single stem, all side shoots being pinched off as they appear. Half the leaf is sometimes cut off, but this is not advantageous unless the plants are overcrowded. The height of the plants must be regulated by the convenience of the house, but after four or five clusters of fruit have set they will in most cases be high enough, and the points should then be pinched out, and all lateral growths carefully removed, to concentrate the vitality of the plant upon the work of maturing the fruit. Sometimes the fruit will set naturally, but it is always safest to resort to artificial pollination.

A light, well-ventilated house, with a medium supply of bottom heat, where a temperature of sixty degrees can be maintained at night, is most suitable. On bright days the thermometer may run up to eighty degrees, but every advantage should be taken to admit fresh air. As to varieties, there are several adapted for forcing, but for a good reliable variety the Lorillard is still the best all-round forcing tomato at command.—Garden and Forest.

The Elberta Peach.—So many varieties of fruits are introduced with a great flourish, only to be discarded in the course of a few years. Some kinds, however, seem to insure permanent popularity, which is a sign of their value. The Elberta Peach is one of these. It seems rather to grow in popularity as the years roll by. It is considered the most desirable of all the yellow flesh peaches, Crawford's Yellow excepted. Possibly some of its popularity comes from its high coloring It is one of the darkest of all, in this respect approaching a nectarine.—Meehans' Monthly for October.

The Garden and Lawn.

GETTING FLOWERS AND PLANTS READY FOR WINTER.

ANY large plants growing in the flower beds, and for which there is not room in the sitting-room windows, can be wintered safely in the cellar. The abutilon, geranium, fuchsia, rose, hibiscus, and others of this class will do very well there if properly cared for. Take them up before frost has injured them, and put them in boxes or pots. Do this as early in the month as possible. Do not give them much water, for that might have a tendency to encourage growth, and what you want them to do is to remain as nearly dormant as possible. Water enough to settle the loose soil about the roots, and set them in the shade, where it is cool. The leaves will doubtless fall off. That is as it should be. The leaves will also fall from shrubs in the garden, and you want your plants that are to go into the cellar to behave as nearly like them as possible. Keep them in a cool place until it is no longer possible to shelter them from frost. Then take them to the cellar, and there let them remain until next spring, keeping them as cool as possible, and giving only just water enough to prevent the soil at their roots from becoming as dry as dust. Kept dry, and in a cool place, there will be little inclination on their part to begin growth, but if in a warm place, and considerable water is given, the chances are that they will begin to grow long before they ought to, and such growth will not only have to be sacrificed, later on, but it will greatly weaken the plant, which should be so managed as to be kept dormant.

When you take up your dahlias, gladioli, and other tuberous roots, do not make the mistake of putting them in the cellar or storeroom immediately. They should be prepared for this place by treating them for several days in succession to a sun-bath, which will ripen them off and leave them in the best possible condition for winter. Tubers and bulbs, on being dug, are full of moisture, which should be given a chance to evaporate or condense. Nothing does this work so perfectly as full and continued exposure to the sun. Do not attempt to remove the soil from them at the time of digging. Spread them out on boards in the warmest spot in the garden, as they are dug. At night, cover with a blanket to keep away frost and keep in warmth. Remove it as soon as the sun is up, next day. By night of the second day you will find that almost all the soil will be in

a condition to crumble away from the plants as soon as you stir them. When you are ready to put them in the cellar, cut away the old tops to within six inches of the root, and let them lie until the stalk shrivels up and seems perfectly dry. I think that most causes of failure to winter the dahlia well, arise from stalks not well dried out. The moisture in the stalk is communicated to the tuber, and decay sets in. I find it an easy matter to winter dahlia tubers in any cellar where potatoes keep well. They can be put in boxes of dry sand, or simply stored in open kegs with nothing about them. I also find that they do best if the whole bunch of tubers is put away as dug. If broken apart in autumn, the percentage of loss will be double that which arises from storing them in a bunch. If your cellar is a damp one, it may be well to hang the roots along the ceiling, where the air is dryest.

Gladioli can be wrapped in paper, and kept in any frost-proof room more satisfactorily than in the cellar, unless it is a very dry one. In one of even moderate dampness, there is a tendency to mold. Such plants as the agapanthus and valotta can be stored in the cellar with perfect safety, and they are better off there than in the window, for there they will be likely to make a premature growth because of too much warmth, but in the cellar they will stand still, and when the time comes for blooming, in June, July, or August, they will be all the stronger because of their enforced rest. But I would not advise putting the amarylis in the cellar, for this bulb likes a good deal of warmth, and there is a possibility that it may want to grow, which it cannot satisfactorily do in such conditions, and whenever this plant starts to grow it should be encouraged to do so.

Before putting plants taken up from the garden in the cellar, cut them back at least one-half. In order to secure a plentiful crop of flowers next season, it will be necessary to have a new growth of branches, therefore nothing is gained by trying to save the old ones. When they are brought up next spring, you will doubtless find that many of the branches left on them are dead, or partially so, and another cutting back will have to be made. As soon as the new branches start, it will be an easy matter to trim the plants into symmetrical form. Oleanders and hydrangeas that are wintered in the cellar should be kept very dry. You will be surprised to see how well they come through with the soil almost in the condition of dust. This is not to be wondered at, however, when you think that the plants are in such a condition that there is no demand for water. They are taking a winter sleep, the same as the shrubs in your garden out of doors, and there the soil is in such condition that whatever moisture there happens to be in it is not in shape to be made use of by the roots running through it. As a rule, there is less danger from too little moisture than too much.—New England Homestead.

A Large Yield.—One Flemish Beauty tree, 20 years planted, yielded this year twenty-five baskets of first-class fruit. The baskets held a peck and a half each. The tree is owned by Mr. H. W. Anderson, Grimsby.

SOME WINTER-FLOWERING PLANTS.

FREESIAS, lachenalias, ixias, etc., when done blooming, are allowed to ripen off. We keep them in their pots in a cool, dry place till September, when they are re-potted; but those not wanted early are kept dry till the cold weather comes, so as not to start them into growth. We separate the bulbs of the freesias, planting six of the larger ones in a 5-inch pot; the smaller ones are planted in flats, giving some blooms and making large bulbs for next year. We bring them into the greenhouse from the frames successively. The freesias is one of our most important winter flowering plants.

Callas.—We grow them in pots and let them rest from the middle of May till the middle of August, when we shake them out of the old soil and put them into 5-inch pots; and about the middle of October shift them into 8-inch ones. Water them liberally with liquid manure all the winter. We get plenty of blooms from them all the winter and up to the middle of May.

Cyclamen.—For the amateur who does not grow these in quantity, two-year old plants will give better results than younger ones. We had some two-year old plants last winter, in 5-inch pots, with thirty and thirty-seven blooms open on them at the same time. Plunge the pots in a shady place during the summer, giving no water, only such as they receive from the rain. In September re-pot them, shaking off the old soil and using the same sized pots; plunge them in some light material, such as leaf mould, in a frame, keeping the sash on, and allowing very little ventilation, and shade them during the hot part of the day. Put the leaf mould well up around and in the pots, only leaving the crown of the corm or bulb exposed; this is to "soften the bulb." Early in October bring them into their winter quarters and place them on a shelf near the glass.—Vick's.

Planting Lilies.—The lily bed should be prepared early this month. Lily bulbs take but little rest, and commence their next year's work almost as soon as they complete this. I have just made a permanent bed by digging out the surface soil to the depth of a foot, the bed being 8x10. In the bottom I put well-rotted manure to the depth of three inches, which was forked in with six inches of the soil below. Then I replaced the soil thrown out, and into it planted the bulbs. They were placed in groups of five bulbs each, two feet apart, the bulbs six inches apart in the clumps, which gives four clumps each of the different varieties planted. The varieties are so scattered that each sort has four places in the bed, which makes the whole very showy the entire season. This is an excellent way of growing lilies where one has plenty of room to be devoted to this purpose, and where the lily is made a specialty.—Am. Agric.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

EXPERIMENTAL SHIPMENTS.—At an executive meeting of our Board of Control of Experiment Stations at Guelph, it was resolved to superintend (1) the exhibit of fruit at Toronto, by our Stations; (2) a trial shipment of tender fruits to England, and (3), an experimental shipment of apples to Australia, in October.

THE SPRAYING EXPERIMENTS planned by the Board of Control of Ontario Experiment Station, has been most carefully carried out by Mr. A. H. Pellet, who reports in many instances most marked results. The Orillia Packet calls attention to the good results attained in Reeve Fisher's orchard, where the fruit on the sprayed trees was cleaner and nicer-looking, and the foliage healthier than on the untreated trees.

FRUIT FROM THE PACIFIC COAST is more and more coming into competition with Ontario grown fruit. California Bartletts now spoil our market in the early part of the season for that variety. California peaches are sold everywhere, and we read in "The Commercial" of Winnipeg, that the first car load of plums has arrived in that city from British Columbia. It was an experimental shipment from the Fraser Valley Fruit Society. This fruit came by express, and the California fruit comes by fast freight, a great advantage to the latter country. Indeed it was found that unless fast freight could be had, the scheme would be unsuccessful.

THE EXPERIMENTAL SHIPMENT of tender fruit to England was a grand failure, owing to the collapse of the cold storage. The provisions on ship board must have been wretched, for a cable has come to hand announcing that every thing was spoiled except the few cases of apples, which, of course, would have carried without cold storage. Surely something is wrong when California fruit growers can ship their peaches safely across the continent, 3,000 miles, and then across the Atlantic, and land them in London in good condition, and we almost at the coast, cannot do it! It is to be hoped that the Dominion Government, which provided the cold storage, will not allow the shippers to be at a loss, after offering cold storage and failing to provide it.

A VISITOR FROM RUSSIA.—Our readers must be quite familiar with the name of Mr. Jaroslav Niemetz, of Rovno, Podolia, Russia, whose correspondence so often appears in this Journal. Mr. Niemetz is one of the most prominent pomologists of Russia, and director of a very large fruit garden, for experimental work. Of apples alone he has under trial some twelve hundred varieties, and of other fruits in proportion. He has recently made numerous exchanges of seeds and scions from Russia and Silesia of novelties with us, in return for American and Canadian varieties of fruits. The Czar of Russia has so recognized the value of his work that he has sent out Mr. Niemetz to make a tour of Canada and the United States in the interests of Russian pomology. He visited us at Grimsby, just before the Industrial Fair, and was exceedingly pleased with the orchards in this section. From Grimsby he went to the Central Experimental Farm in Ottawa, and then spent three days at the Industrial in Toronto, taking copious notes for his report.

FIG. 828.—MR. JAROSLAV NIEMETZ.

CANADIAN MARKETS.—Messrs. Vipond & Co., one of the leading commission firms of Montreal, sends a circular under date of the 13th September, in which they express lack of confidence in any good results from the attempt to place our tender fruits in the English market by cold storage. They say further:

"We notice that some of our Western Canadian growers have been induced to ship their fruit to England, to try the new Government fad of cold storage. They will get nothing in return for these goods, and will be lucky if they don't have to send money to pay freight.

"The fact is that Canada grows no fruit fit to export across the Atlantic but apples, and not a great many of them are fit. Our plums, peaches, grapes and pears are all inferior to foreign growth, they do not look as well, and don't keep as well. Instead of foolishly investing money in hunting foreign markets, the Government would do some service to assist our growers in acclimating and securing fruit that will compete in our home markets with the foreign kinds. Some of our growers have done nobly in this effort. Such men as the Woolvertons, A. M. Smith, E. C. Beman, and scores of others deserve the utmost credit, but it is a deplorable fact that we have grown in Canada a great quantity of fruit that is of little value. California, New York State, and even the Southern States, are crowding our growers with superior fruit, in spite of war tariff.

"And while we are speaking, why does it cost nearly as much to bring peaches, etc., from the Western Peninsula of Canada to Montreal as from California, and why must our growers submit to heated ovens in the shape of express cars that ruin the fruit, and rough handling that is positively barbarous? We have spoken fairly, Montreal and Toronto are the best markets in the world for any Canadian fruit, including apples, etc. We want you to demand a reform in the transportation of fruit; it is a positive disgrace, eating out the life of your profits; the commission men are doing their utmost here for you, but goods arrive bruised and rotten, with outrageous express and freight charges on them."

[Still we can see only good resulting from this trial shipment of tender fruit. If it prove a loss, it will not be a heavy one, and we will have learned from actual trial what is otherwise only guessed at. When California peaches and pears can be placed in the English markets with profit, we are inclined to try Canadian peaches and pears, for the quality of our fruit is superior to California, even if inferior in appearance.—ED.]

Question Drawer.

Propagating Gooseberries.

751. SIR,—Please tell me the best means of propagating gooseberries.

JOHN REID, SR., *Everett.*

Gooseberries may be propagated either by cuttings or by layers. Cuttings may be made in the autumn and buried until planting time in early spring.

They should be six or eight inches long, and planted so as to leave only one or two buds above ground. The surest method is by layering, which is well described in the following from Gardening :—

During a second visit to the State Experiment grounds near Geneva, N.Y., in August, I learned the secret of the thrifty growth and yields of the gooseberry plants there found in numerous varieties. The foundation on which this success primarily rests is good strong loam, reinforced by yearly moderate applications of stable manure and good tillage. Repeated spraying with the solution of liver of sulphur, which the Station people prefer to the Bordeaux mixture for this particular purpose, keeps the foliage in good health, and, therefore, the wood growth normal and strong, and also the fruit free from mildew. With the same

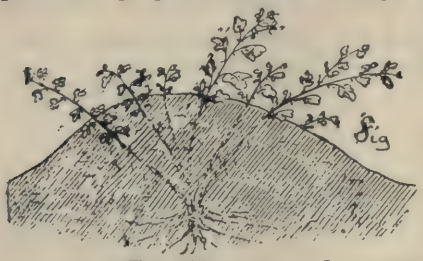


FIG. 829.

LAYERING GOOSEBERRIES. FIG. 830.

conditions plants and plenty of good fruit can be produced elsewhere. There can be no question that gooseberries thus handled can be made a very profitable crop.

Layering Gooseberries.—Layering, as stated on former occasions, is a far safer and better method than making cuttings, so far as the gooseberry is concerned. A single plant hilled up for inducing the young canes to strike root along their base, is shown in Figs. 829 and 830 of accompanying sketch.

A dozen or more good plants may thus be made of one strong plant two or three years old, and these young plants, if properly planted out and taken care of, will be in shape to give quite a little fruit the second season from planting.

Pruning Grape Vines.

752. SIR,—Please tell me the best time for pruning grapes.

JOHN REID, *Evevett, Ont.*

As soon as the wood is thoroughly matured in the autumn, and the leaves fall, is the most natural time for pruning the vineyard. The healing process will begin almost at once, and no loss of sap will result in the spring time. In the colder sections, however, the cut surface seems to render the vine somewhat more susceptible to cold unless well buried under the ground, or unless longer pruning is practiced, so that a few buds may be spared to succumb to the effects of frost.

Open Letters.

New Strawberries.

SIR,—I have some eight or ten seedling strawberries that fruited the past season and which give indication of being first class. I picked these out of some two hundred seedlings and I have about two hundred more that will fruit for the first time next season, choice crosses with the best kinds for parents, such as Woolverton, Marshall, Brandywine, Bubach, Haverland, Greenville, VanDeman and others. Clyde did the best in either old or new kinds, and it is going to take a first place as a general purpose berry. It is of large, firm, good flavor, good looking and the plant is perfect in every way and stands the hot dry time well. I am sure of what I say, as I have fruited it now three times. It came out best this year in a test with over one hundred and thirty of the best kinds.

E. B. STEVENSON, *Freeman.*

Conn Gooseberry.

SIR,—Have you noticed the quality of the Conn, or Autocrat when fully ripe. Some friends here pronounce it the best berry for eating and all remark how much it resembles the Gage plum. Two of my friends remarked that it was a revelation to them that gooseberries were so fine for eating. Certainly nothing but Lancashire Lad comes up to it in this respect. It has one bad fault, namely, the early loss of its foliage.

STANLEY SPILLETT, *Nantyr.*

Pewaukee Apple.

SIR,—For six years in succession here six Pewaukee apple trees have yielded fifteen barrels a year, that is an average of two and a half barrels per tree, to my certain knowledge. They were sold right in the orchard for $1.25 a barrel. The present owner of this orchard purchased forty acres four years ago upon which were two hundred trees of every variety almost, about eighteen years planted. I have made a little calculation as to the result as follows :—Had these two hundred trees been all Pewaukee, he would have paid for his place off the four acres of orchard in three years and had a surplus of $375 in his pocket. As it is, the orchard has not paid the interest. So much for judicious selection of varieties in planting for money. If planters are setting out apples as ornamental trees, something cheaper would surely be better.

STANLEY SPILLETT, *Nantyr.*

Our Book Table.

THE SOIL, its nature, relations and fundamental principles of management, by F. H. King, Professor of Agricultural Physics in the University of Wisconsin. New York: MacMillan & Co. 1895.

This excellent work is the first of an entirely new series of books, edited by Professor L. H. Bailey, and to be known as "The Rural Science Series," which is to include a series of readable and popular monographs on agricultural subjects. This one contains over 300 pages, and is illustrated with numerous engravings. It treats of soil, composition, soil moisture, soil temperature, farm drainage, irrigation, tillage and fertilizers, etc. The price is only 75 cents.

CATALOGUES.—*Rennie's* Autumn Catalogue, Bulbs and Plants. Wm. Rennie, Toronto. .... *Vilmorin-Andrieux et Cie.*, Ognons a fleurs et fraisers. Address 4 Quai de la Megisserie, Paris, France.... *Edwin Hersee.* Woodstock, Bloomsdale Nursery.... *Fred E. Yerong.* Rochester, N. Y., Fruit Trees.... *Stephen Hoyt & Sons.* New Canaan Nurseries, New Canaan, Conn.... *John A Bruce & Co.* Flowering Bulbs, Hamilton, Ont.... *T. V. Munson.* Trees and Plants, Denison, Texas.... *Geo. S. Josselyn.* American Grapes, Fredonia, N. Y.... *John A. Bruce & Co.* Seeds, Hamilton, Ont.... *The Lovett Co.* Trees and Plants, Little Silver, N. J.... *J. A. Simmers.* Bulbs, 147 King St. E. Toronto, Ont.... *P. J. Berkman's.* Fruit and Ornamental Trees, Augusta, Florida.

JOURNALS.—*Farming*, is the title of a new monthly magazine, issued by the Bryant Press, Toronto. September No. is the first issue, and if the high tone and useful character of the contents of this number can be maintained, it will surely be the very Journal needed by Ontario farmers.

Mayflower for September, 1895, comes to hand, enlarged and improved. It has numerous interesting articles for flower lovers. Address, John Lewis Childs, Floral Park, N. Y.

RECIPES FOR NOVEMBER.

Again the apple, that wholesome, toothsome, handsome fruit is here, and baked apples, apple sauce, apple pie, apple fritters, apple jam, apple snow, and even fried apples, will grace our tables.

"*Brown Betty*" is another way of preparing this fruit that makes it delicious. Pare, core, and slice six tart, juicy apples; put a layer of stale breadcrumbs in the bottom of a baking dish, then a layer of apples, then more crumbs till all is used, having the last layer crumbs. Add half a cup of water to a half-cup of molasses, and stir in two table-spoonfuls of brown sugar; pour this over and bake in a moderate oven for one hour. Serve with cream.

"*Apple Mound*" is made by paring, quartering, and coring six large, sour apples; put them in a pan with one pint of water and two cupfuls of sugar, cover closely, cook in the oven half an hour, then remove the cover and continue cooking until a little of the juice will turn to jelly when dropped on a cold plate. Pour it into a wet jelly mould, and when it is cold and stiff turn it out into a deep platter, and pour a pint of sweetened and flavored whipped cream around it.

Citron Preserves.—Peel, cut into slices three-quarters of an inch thick, remove seeds, cut into squares, weigh, boil at once in water, without sugar, till tender; take out and drain, throw away water; make syrup with fresh water, pound for pound of fruit, using white sugar; add fruit; then boil till clear and the flavoring get well set. Flavor with root ginger or lemon juice to taste; if ginger, remove when finished. The syrup should be of the consistency of honey when finished. Citrons thus boiled without sugar cook more quickly, and make more tender preserves; they are clearer also, when the first water is drained off.—Live Stock Journal.

BROWN BETTY.

GO gather the apples that red ripe are lying,
And cut all the cores and the peelings away ;
Then slice them, just as one would slice them for frying,
And we'll bake a brown betty for dinner to-day.

Then get a deep pan, with a close fitting cover,
Alternately apples and crumbs in it lay ;
With sugar and cinnamon sprinkle them over,
O, we'll bake a brown betty for dinner to-day.

Now go, fill the pitcher with milk that is creaming,
And carry brown betty along on a tray ;
An odor deliciously spicy comes steaming—
O, we'll have a grand feast on Miss Betty to-day.

—ROSE LANGTRY.

THE

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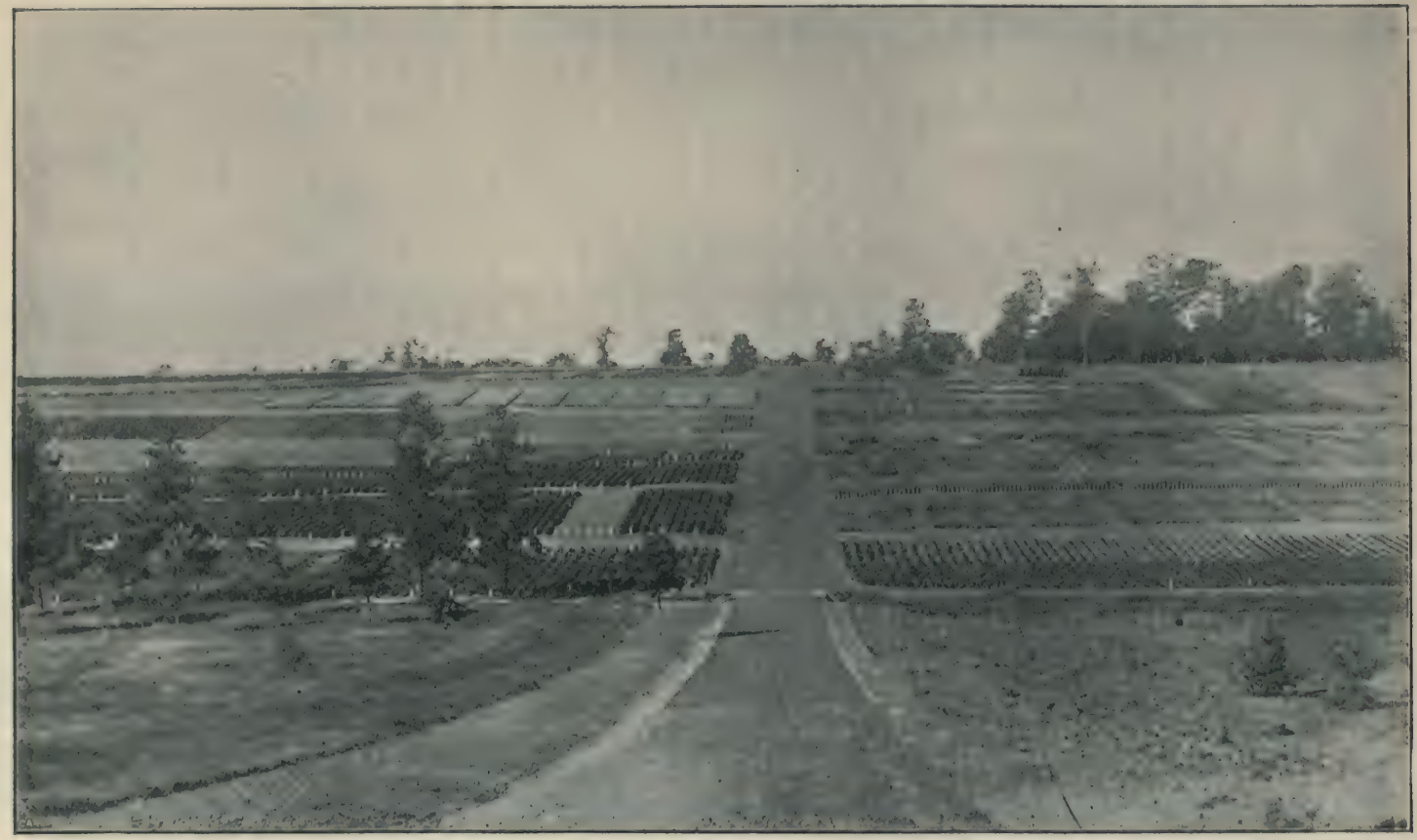
PRESIDENT MILLS AND HIS WORK.

NOW that Dr. Mills has become so closely associated with Canadian fruit growers, as President of the Ontario Fruit Experiment Stations, it seems fitting that his face should form the frontispiece of one of the issues of the CANADIAN HORTICULTURIST. His career has been so well sketched by Mr. F. W. Hodson, that we extract a portion of it. James Mills was born of North of Ireland parents, in the County of Simcoe, Ontario, in the year 1840. There, until he reached twenty-one years of age, he received a most thorough training in all the practical details of Canadian farm work, as the farm upon which he was brought up, and upon which he worked, was one of the best managed and best cultivated of the Province. So far his life had been intensely practical. A serious accident formed the turning point in his career. At twenty-one he lost his right arm in a threshing machine, and, thus handicapped, he stood upon the threshold of his life work with responsibility, and what some would call disaster, staring him in the face. He then entered

the public school, and began his education at the time when the majority of young men have already finished. Hitherto his training had been manual or physical; now he began to develop the mental side of his nature. From the public school to Brantford Grammar school, and thence to Victoria College, Cobourg, he was led in his studies. From Victoria College he graduated as Bachelor of Arts in 1868, taking the gold medal for the year for the highest rank in general proficiency. Thus closed the second period of his life, and seven years of study and preliminary training. After graduation, he taught for a while in the Cobourg Collegiate Institute, from which position he was promoted to the headmastership of the Brantford High School. This institution was then in rank a third or fourth rate school; under Mr. Mills it soon became a collegiate institute, and began to attract attention as one of the most successful for training young men and young women for general work, for teachers, and for University examinations. The growth of his school and its reputation for thoroughness and good discipline, suggested a man for the Agricultural College when the presidency became vacant. The offer came to Mr. Mills from the Government entirely unsolicited, and was accepted in the summer of 1879, when began the fourth period of his life, the work in which he is still engaged. The Ontario Agricultural College had been established in 1874, and for many years had many and great difficulties to contend with. We sometimes hear a great deal about the agricultural colleges of the United States, but they have been forced, in order to maintain an existence, to enlarge the scope of their work by including technical, teachers' and even commercial courses. In many of these colleges the agricultural course has been the least successful. The attempt, therefore, to maintain an Agricultural College on its own merits in this Province has presented peculiar difficulties, and the success achieved is much to the credit of the various officials who have from time to time guided its course. When Mr. Mills became President, the College was still working up hill, fighting its way with little encouragement, and with much opposition. For the past sixteen years he has devoted his unstinted energies to the work. The College is a large institution, and has presented extraordinary problems to solve. It has had a hard struggle to gain the recognition and approval of the very class for which it was established. It has all the perplexities attendant upon a large boarding school. It has had to overcome the prejudice aroused by having had, in its earlier days, a number of students who were not agricultural in their up-bringing or their inclination. The students are now coming from the best farms of the Province, and the institution is becoming more and more every year an Agricultural College for Ontario.

The work of the College has been greatly enlarged during President Mills' *régime*, by the addition of a third year's course, and affiliation with Toronto University, whereby the degree of Bachelor of Science in Agriculture is conferred upon its students. Travelling dairies have been instituted by the Minister of Agriculture, and the work performed by the dairy department of the College.



View of the Experimental Grounds, from near the College Buildings.

In this work President Mills has taken a very active part, and the labors of his office were thereby greatly increased. The high esteem in which President Mills is held by the farmers of Ontario, and the very high regard in which he is held by the leading agriculturists of the United States, prove that his work has been most successful. Personally President Mills has the best wishes of all; he is known as a man of energy and thoroughness. He has shown the greatest courtesy to the many thousand farmers with whom his work brings him in contact at Guelph and elsewhere; he has kept himself free from party politics, and is as acceptable to Conservatives as to Reformers. His administration of affairs is clear and above reproach. He has never been known to seek praise or publicity, to sound his own praises or encourage others to sound them for him, to gain any notoriety by pulling or tickling the ear of the public. He has simply done his duty, and that not always a pleasant or popular one, and has allowed himself to be judged by the public on the merits of work done. His work speaks for him, and the agriculturists and others of this Province know that the Ontario Agricultural College embodies the life work of President Mills and the many energetic workers by whom he has surrounded himself during the past sixteen years. Since Dr. Mills has been given full control of the College, things have become settled into systematic methods, and one can see evident marks of progress in every department.

In our last number we referred briefly to the Horticultural Department, which has only recently been added, but which, under the careful management of Prof. Hutt, coupled with Dr. Mills' wise oversight, promises to be one of the most important and popular departments of study at the College. Another department which has been fostered by Dr. Mills is that of Agricultural Experiments; and this deserves passing notice from us, even if not connected with fruit growing. The experimental grounds cover an area of about 40 acres, and have been divided into 1,700 plots, and are laid out in ranges about four rods wide. A road about one rod wide runs through each two ranges, and a wider driveway divides the ranges into two equal parts. Our readers will be interested in the accompanying view of these experimental plots, and we may imagine, if possible, the work and care necessary to harvest separately, cut, haul, weigh, thresh and clean the products. The experimenter in charge of all this work is Mr. C. A. Zavitz, a gentleman well fitted to make the best of such excellent opportunities.

Another fine view from the top of the College is that of the Dairy Department, under charge of Prof. Dean, a department well known to our readers through the Travelling Dairy.

Any one of our readers who wishes to know more of the extent of the work now in charge of Dr. Mills, should write to the College for a copy of the last annual report.

ON page 378, for "Gardening," read "American Gardening."

View of Dairy Department, Taken from the College Building.

IDENTIFICATION OF VARIETIES OF ORCHARD FRUITS.

IN view of the progress of our experimental work in fruits in the Province of Ontario, and of a large number of varieties—new and old—under test at our Experiment Stations, all of which must be described with reference to their adaptability to Canada, it is important that we duly consider the characteristic points and their proper descriptive terms. Some years ago, Mr. H. E. Van Deman, then U. S. Pomologist, wrote a paper for the American Pomological Society, which we consider of sufficient interest to students of Horticulture in Canada to reproduce in these pages, as follows :

All classification of natural objects may be said to be only approximately correct and strictly arbitrary. The established rules for such classification are frequently found to be unsuitable. The further we proceed with this classification the more complex and difficult it becomes. It is easier to distinguish and separate the natural orders of plants than the genera and species ; and when the subdivisions of species are reached, even the most learned doctors disagree. At this critical place and upon this treacherous ground the pomologist is obliged to make his way.

To be able to recognize every variety of our commonest fruits is utterly impossible, even by the most experienced. However, by carefully studying certain characteristics, and having a vast deal of experience with specimens grown under different conditions of culture, soil, and climate, one may become able to generally determine the names of varieties. To give in a sample way my views of what may be the cardinal points in such identification, is the substance of the hope that inspired the present attempt.

All will agree that certain characteristics of fruits are more constant than others ; these known and we will have gained one point. To my mind, considering all classes, there is no one character so fixed as the form. This will in the main prove true of all kinds, and as well of the immature as the fully developed specimens. Take the apple or pear before fully out of bloom and a difference of varieties may be noticed by their elongated, rounded, or irregular forms.

To some persons all babies are alike, but not so to the nurse or mother. So of the observant pomologist and his fruit. A Chenango the size of a marble is not the shape of a Rambo, nor would a Vicar half so large be taken for a Sheldon. Indeed it would not be hard to tell the difference between such marked varieties even before their petals had expanded. A cluster of the compactly formed Elvira grape could be told from one of Creveling, or even Concord, when only large enough to be observed at all. With growth these peculiar forms enlarge rather than change. Even starvation would not materially alter their shape. Let this then be our main guide in identifying varieties. Of course there are frequent, sometimes radical, variations from the typical forms, occur-

ring from sports of nature, or by accident, such as stings of insects or fungous diseases.

Another step will be to define the several characteristics of varieties, and place them in their relative positions. To do this, we will take up the several species of hardy orchard fruits in detail, comprising what are usually known as the pomes and drupes. First among these is

THE APPLE. *Form.*—Observed from a point perpendicular to its axis, may be round, flat, conical, oblong, or cylindrical; or from either end it may appear round, elliptical, angular, ribbed or scalloped. These latter forms may be called regular when round or nearly so, and irregular when otherwise. Then there are other peculiar forms, such as inclined, as in the case of the York Imperial, or unequal, like Cooper and Colvert, in fact, like very many apples.

The Basin.—The depression almost always found at the blossom end of the apple, and in which the eye is set, is either wide, narrow, shallow or deep; regular like that of Fall Pippin, waved as we see in Northern Spy, or folded into wrinkles like Yellow Bellflower. In a few apples and some of the Crabs it is wanting.

The cavity is at the opposite or stem end, and is sometime very deep and narrow, or wide and sloping like Rome Beauty. Pryor's Red and Pewaukee have the cavity almost filled. In the case of Swaar, Roman Stem, and a few others, it is marked by a peculiar welt, and said to be lipped.

The core is equally well marked, and usually conforms closely to the exterior shape of the apple. Some varieties have very small, compact, or closed cores, while others, like Ortley, are large and open. If the outline meets at the point of the calyx-tube, it is said to be meeting, if otherwise, it is clasping. I have found this to be quite uniform in those of one variety.

The flesh is perhaps the next character least subject to change. Who does not know the difference in weight between Yellow Newtown and Ben Davis, or the color of the flesh of Fameuse from that of Winesap, or the difference in taste of a rich and spicy Grimes' Golden, a melting Primate, or a coarse and acid Oldenburg? The flesh of an apple may be said to be coarse, fine, tender, or firm; white or yellow; dry or juicy; and in flavor sweet, sub-acid, or sour, rich or insipid. Of course climate and state of maturity have much to do with the flavor, but less as regards color and grain.

The eye, which is composed of the calyx and the small cavity which is hid by it, is another reliable mark. There is a difference in the width and length of the calyx-tube also. If the sepals form a closed or an open eye in one specimen of a variety, it is a good indication that all others of the same variety are similarly formed.

Dots on the skin are very likely to be uniform in color, size, and shape in one variety, except their being smaller and closer to each other towards the eye. They are numerous or scattering, large or minute, dark or light, round, elon-

gated or star-shaped, and surrounded with light or green bases. Although small, these dots are in no wise to be overlooked.

The seeds may be numerous or rare, large or small, yellowish, like Hightop, or grey, brown or black. In shape they vary also, from short and plump, to slender and imperfect, as may be found in King of Tompkins.

The surface is sometimes uneven, lumpy, or pimpled, again it is smooth and glossy, like Wealthy, or waxy to the touch. Lowell is often called "Greasy Pippin" from this cause. All grades may be found, from a surface like polished glass, to the rough and rasping coat of the Russets. Color is a striking feature, but it is so often changed by climate, culture, season, sunshine, or shade, that we are apt to be misled by it.

If reddish stripes are never displayed, but merely a blush, or if no red color appears at all, it is proper to call the variety self-colored. Those that are striped or splashed with red in its different tints and shades, form another distinct class, and also the largest.

That peculiarity which we call russet forms the third class as regards color, and is most puzzling. Roxbury is usually distinct enough, but varies with the conditions of growth and climate. I have seen Pryor sometimes heavily russeted, and again as brightly striped as Ben Davis. There are more or less russet marks on nearly all varieties, and especially about the cavity, which is indeed a very good guide to their identity. In some it gives a sort of bronzed appearance. Another form is a sort of leather-cracked appearance about the basin, peculiar to very few kinds.

One of the most peculiar marks is what might be called pin-scratches, running from stem to eye, notably on Tallman and rarely on Keswick. They never exceed five, and in the Northern climates are much more distinct than in the South and West. Not to be overlooked is what we call bloom. The Russian varieties and the Crabs are almost invariably covered with it; it is a reliable mark of identity. Another characteristic is a grayish-white coating, such as is seen in stripes upon White Pippin and White Winter Pearmain. Sometimes it is suffused with other colors, giving a dull color to otherwise bright skin.

The size of all fruits is so varied that we must not lay too much stress upon this point. We see Lady apples as big as average Maiden's Blush, and Fallawater the same size; then we are forced to depend on shape, or almost any other indication. Apples may be graded as very small, small, medium, large, and very large.

The stem is with some kinds a constant mark, but it often fails to be so. It may be short, medium, or long, and stout or slender. Occasionally there is a pulpy growth upon the stem, which may be denoted as fleshy. The points of resemblance between the pomes are so close that but little deviation is necessary, and a repetition of descriptions will be avoided whenever possible.

JAMES MILLS, M.A., LL.D.,

PRESIDENT ONTARIO AGRICULTURAL COLLEGE, GUELPH.

LOCATING FRUIT EXPERIMENT STATIONS—II.

EARLY in September we continued our work, this time east of Toronto. At Whitby we visited an applicant, Mr. R. L. Huggard, who has already a fine collection of varieties. Of pears he has 40 varieties ; of apples 60 varietles ; of plums 50 varieties ; of grapes 30 varieties. In all he has eighty-five acres of ground, and of this ten acres is in fruit. Among other interesting varieties of apples he showed us fine samples of the *Minkler* and of the *Boston Star*.

At Newcastle we called upon Mr. E. C. Beman, a gentleman who has 150 varieties of pears under test. He has thirteen acres of pear orchard and in it some very fine trees. One Flemish Beauty, sixty years planted, yielded him this year five barrels of fine fruit.

One variety of pear which Mr. Beman grows quite largely is the *Wilmot*, a seedling which he harvests about the 20th of September. It is not a large pear, but being firm, of good quality, and in season until October 1st, it sells well when the Bartlett season is over. The tree is very productive. He has 300 large trees of this variety, and one old tree which is about thirty feet high, and about six feet in circumference. Mr. Beman also has a good many trees of the Duchess Precoce, a pear much resembling the Bartlett, but later, and inferior in quality. He also has seventeen trees, five years top-grafted,

FIG. 836.—MR. DEMPSEY'S APPLE HOUSE.

of the Woolverton, or Princess Louise apple. They are heavily laden, indicating great productiveness of tree. The samples show two distinct varieties in external coloring, while the quality remains the same; one is somewhat striped, the other with a decided red cheek on yellowish ground. Mr. Beman also shows one of the trees of the Ontario received from our Association, now loaded down with choice fruit.

At Trenton we found the orchard of our experimenter, Mr. W. H. Dempsey, in an excellent state of cultivation. He has built an apple store house, which has two dead air spaces all round, and in which his apples keep perfectly. He finds he can almost double the value of choice apples by storing them, and then assorting and shipping it to the British market just when each variety is most wanted. A photogravure of his apple house is here presented. It is not a very expensive building, and a large part of the work has been done by Mr. Dempsey, who is himself of a mechanical turn.

Mr. Dempsey's orchard is very extensive, and has already been described. Walking through it from the packing house toward the mountain, on the slope of which the orchard is situated, we passed through a fine avenue, bordered on

FIG. 837.—ORCHARD OF MR. W. H. DEMPSEY, TRENTON.

either side with heavily laden trees of the Fameuse apple. They were all clean, bright, and large, promising a rich return. Our photogravure gives some idea of this view. The Ben Davis also was heavily laden, as usual, with magnificent fruit.

At Maitland, just below Brockville, we called upon Mr. Harold Jones, whose orchard is delightfully located upon the banks of the St. Lawrence. We found that Mr. Jones has seven hundred acres of land, and quite a large orchard of Fameuse, which indeed is the principal orchard variety of that section. He is an intelligent progressive kind of man, and has kept his orchard of Fameuse clear of scab by faithful spraying. It is his intention to devote himself in future largely to fruit growing. Some delightful views of the St. Lawrence were shown us by Mr. Jones from certain elevations on his farm; and afterward he rowed us out on the sparkling waters of the river, in order that we might have a good view of the river bank and of his orchard. A little snap of this view is here given, showing the house by the side of a lofty poplar, and the orchard on either side.

Mr. Jones counts among his ancestors, Dr. David Jones, who was engaged to the beautiful Jenny McCrae, scalped by the Indians at Fort Edward on the Hudson; and also Mr. Dunham Jones, Capt. of the Canadian troops at the Windmill fight, near Prescott, in 1837.

FIG. 838.—VIEW OF MR. JONES' HOUSE.

CIDER FOR EXPORT.—We have received from Mr. H. B. Small, secretary of the Department of Agriculture, Ottawa, the first number of a new journal called "Cider," published at 15 Lincoln's Inn Fields, London, W.C., England. The secretary calls attention to the importance of this article in the English market, and suggests the possibility of an export trade in it. Perhaps some of our Ontario fruit growers, who have been giving attention to cider making would like a trial shipment to Great Britain.

EARLY VARIETIES ON STRAWBERRIES.

IT is almost impossible to make a Report this year. The crop was so badly injured by a week's hard frost at blooming time, and that followed by a long season of hot dry weather, that it was impossible for any variety to do its best. This fact must be kept in mind in what follows, especially in the illustrations. These are at least ¼ smaller than they would have been if they had had a good shower during the time they were maturing. The cuts are the exact size of berries that grew on the respective varieties this season of 1895. I shall first present 6 or 8 of the best extra early and early sorts, to be followed by 8 or 10 of the best medium varieties, and, lastly, by the best late kinds. These are selected out of some 140 of the best named kinds that are now before the public, the simple facts as they presented themselves are given, with regard to each kind now offered to the readers of the HORTICULTURIST. The Clyde did best of all; Beder Wood came next. Some of the varieties that had the flower-stems and flowers frozen, sent up a secondary set, notably the Clyde and Beder Wood; some did not. The Haverland, Bubach and Van Deman were among those hurt the worst, and did not recover, only producing a very few berries; what fruit there was was small and ill-shaped, not typical berries, of many of the kinds.

1. Van Deman (S).—One of the earliest, an extra early is the Van Deman. A seedling of Crescent, crossed with Capt. Jack, and comes from Arkansas. The plant is a free grower, making a wide matted row, and when allowed to grow too thick, rusts somewhat; the season is extra early, a few days before Michel's Early. Size: the fruit is large and very beautiful, a box of them fairly compelling you to look at them; the berries look as if varnished and set with golden seeds, they are a grand sight; one of the good things about them is, the quality is as fine as the look, they are first quality and firm, and, lastly, very productive. The best to fertilize Haverland, Warfield, Bubach and other early pistillates. The great danger with the Van Deman is, it is often caught by the frost, it is so early to bloom and fruit. This is the fourth year of fruiting.

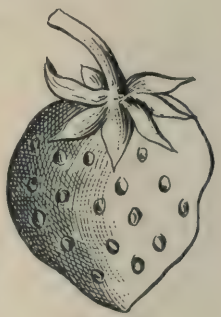


FIG. 839.
VAN DEMAN.

FIG. 840.
MICHEL'S EARLY.

2. Michel's Early (S).—A chance seedling, thought to be from Crescent, by J. T. Michel, of Arkansas. The plant is a wonderfully vigorous grower, making plants by the million. The season is very early, only a few days after Van Deman. The size of fruit is small to medium. The quality is fair and medium in firmness. The great fault with it is, it lacks in productiveness; if you could secure $1 per box they might pay, and yet in some soils and sections of country, it is said Michel's Early is more than average in productiveness; but where there is one favorable

report, there are more than nineteen unfavorable; it is not anything like as profitable as Van Deman or Beder Wood. Fourth year of fruiting.

3. Margaret (P).—This is a seedling of the Crawford by Mr. Crawford, the strawberry king of Ohio. The plant is a strong grower, healthy, making runnets freely. The season is very early; size of fruit is large and fine looking, quality good; color crimson. Firmness, medium and productiveness, fair. This was the first season it fruited here and as it was one of the most unfavorable seasons, I would like to make further trial before pronouncing on it, but it is very promising. It has not been introduced yet.

FIG. 841.—MARGARET.

FIG. 842.
STONE'S EARLY.

4. Stone's Early (P).—This is a seedling by Mr. Stone, of Illinois. The frost and hot dry weather succeeding was very hard on the variety. The plant is a healthy one, growing freely; the season is early. The size of the fruit was small this season, but that may have been owing to the dry spell just as it should have been at its best. The quality is fine; color scarlet. It was not very productive. This was first season it fruited here, must wait for further trial before deciding as to its merits.

5. Beder Wood (S) or Racaster.—A seedling, by Mr. B. Wood, of Moline, Illinois. The plant is a good grower, making a wide row. It rusts somewhat when too thick. The season is early, among the earliest. The size of berry is medium to large; one fault it has, some of the berries do not ripen evenly, leaving a white underside. It is very rich in pollen, and so a good fertilizer, the quality is only medium. Firmness, medium; productiveness very good; in fact it is one of the most productive; of all, certainly the most productive early variety. It was among the best this dry year. Fourth year of fruiting.

FIG. 843.
EDER WOOD, OR, RECASTER.

6. Rio (S.)—This is a seedling of Sharpless, grown by Mr. Thompson, of Virginia.

The plant is a good healthy grower, making a good wide row. The season is second early here this year. Size of berry is about medium; bright red color. Quality is good. Medium in firmness. It is productive. This is first year of trial. Must give it further trial, but I am very favorably impressed with it, and think it very promising.

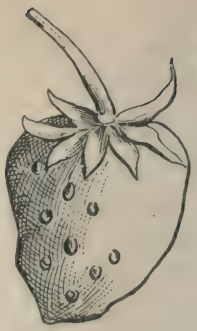


FIG. 844.—RIO.

FIG. 845.—CLYDE.

7. Clyde (S).—This is a seedling of the Cyclone, grown by Dr. Stayman, of Kansas. The plant of the Clyde is perfect in every respect. It is very healthy and vigorous, not a spot of rust or trace of disease on it. It resembles its patent and the Haverland, but is stronger and more vigorous than either of them. The season is second early, continuing a long time. Size: it is large, no small berries. Quality is good and it is very firm, a bright, dark scarlet in color, and one of the most productive. This season it stood far and away at the head, showing that it is a dry season berry. The strong plant with its roots going down so deeply enables it to stand a dry time better than many others. I consider it one of the best, if not the best, of the general purpose berries now offered. I have fruited it three seasons. I would advise all berry growers to plant some Clyde. The following is Michigan Experiment Station Report of it: "Out of 10 points: productiveness, 9.8; quality, 8.5; firmness, 9.2; one of most promising."

8. Cyclone (S).—This is a seedling of Crescent and Cumberland, grown by Mr. Cruse, of Kansas. The plant is a strong, healthy, vigorous grower. No rust or disease. Season early. Size medium. The quality is good, glossy red, firmness medium, and very productive. A good one to plant with Haverland or Bubach, as it is a very early bloomer and continues a long time in bloom. It does not stand the dry weather as well as the Clyde, nor is the fruit as large, still it is a good one to plant for early.

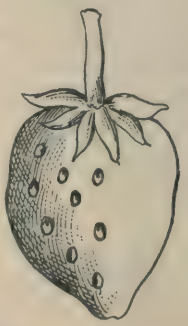


FIG. 846.—CYCLONE.

SUMMER PEARS.

AMONG the early varieties Clapp's Favorite has proved the most profitable, and where a succession of pears is desired, there is no better list than this early variety, followed by Bartletts and Seckels. The first should be nearly harvested before the Bartletts are ready for shipment. The trouble often is with Clapp's Favorite that it is not picked early enough. For market use this pear must be picked before it is ripe, or else it will rot quickly at the core, and prove a failure. One needs some experience with this pear to know just when to pick it. It ripens so quickly after it reaches a good size that one may suddenly find his whole crop over-ripe before half harvested If for home use the pears can be left on the tree all through August, but when raised for market the whole crop should be gathered early in August. The supply ought to be off the trees before the 20th of the month, and yet I have seen people just starting in to pick them at this time. Generally the pear is ready for harvesting on the first day of August, and I have started in to pick them on the 25th of July.

The crop of Bartletts should not be touched until the Clapp's Favorite are about out of the way. I do not believe in sending half ripe Bartletts to the early market. The time has gone by when people would buy these early inferior fruits simply because they were the first of the season. The Bartletts are poor fruit unless properly ripened.

I believe that farmers and fruit-growers would realize much more profit from their pears if they had cold storage on the place. Bartlett and Seckel pears would especially pay the growers for their cold storage house. It is all right to ship the Bartletts to market when the prices are good, but as soon as the glut begins (and it comes every summer now) I should advise growers to hold on to their fruit. If the pears are picked before they are ripe, carefully wrapped in paper, and kept at a freezing temperature, they will keep for months. Later, when the season is nearly over, prices go up again and profits are doubled. If we do not adopt the cold storage system the speculators and commission merchants will. When the market is glutted they buy up the fruit by the carload and store them for future use.

What is true of the Bartletts is far more so of the Seckel pears. These naturally have better keeping qualities than the Bartletts, and by putting them into cold storage they can be kept until after Christmas. As we have no winter pear that begins to compare with them in quality, they meet a handsome winter sale. Boston makes a specialty of ice-house Seckels, and they are quoted in the markets until mid-winter. The Lawrence is later than the Seckel, and can be kept longer, but it has no such general demand as the old favorite Seckel.—S. W. CHAMBERS, in Rural Canadian.

SMALL FRUITS IN FALL.

HUNDREDS of acres of land are devoted to small fruits, which are annually cropped with no return to the soil of the elements taken from it. Strong competition has forced strawberry-growers to go to some expense for fertilizers in order to produce large berries, but the raspberries and blackberries receive but little manure or fertilizers. In the fruit-growing sections dairying is given but little attention; hence manure is not plentiful, reliance being placed upon commercial fertilizers. There is only one point regarding raspberries and blackberries, that is the large production of canes every year. This growth of new canes takes from the soil a much larger proportion of plant food than do the berries, and as fields may bear successive crops for ten or more years, the importance of an annual application of fertilizer cannot be too strongly urged. The early spring is usually the period of the year when fertilizers are applied, but there is a heavy growth of canes until late in the fall. In fact, the plants get ready during the summer and fall for next year's crop of berries.

When to Apply Fertilizers.—The spring application of fertilizers will always give excellent results, but they should be very soluble in order that the canes, which grow very rapidly, may be plentifully supplied, but after the crop is picked an application of potash and finely ground bone should then be used. Nitrogen should not be applied very liberally in the fall, as it is liable to be carried away by the excessive rains during the winter, owing to its ready solubility; but mineral matter will assist in the production of larger and healthier canes and aid them in resisting the attacks of insects and diseases. It is claimed that plants possess a "storage capacity"—that is, the ability to hold within themselves the substances from which the fruit is produced the next year—which claim is not fully accepted, however, but it is well known that when plants have have been cultivated and liberally supplied with plant food in the summer and fall they respond to the good treatment, and yield more than a sufficiency of fruit to compensate for the expense incurred in pushing the plants forward and enriching the land.

Cultivation Necessary.—Outside of an effort to kill off the largest seeds between the rows, the canes of blackberries and raspberries receive but little cultivation, and in the rows among the plants weeds and grass contend for supremacy. The field is usually given up until spring, except to cut out the old canes during the winter, and the land is compelled to grow two crops—canes and weeds—and the canes are kept down, being unable to resist drought

because much of the plant food and moisture is taken by the weeds. Not only should deep and clean cultivation be given between the rows, but it will be an advantage to give the canes more room, so as to cultivate them under the "check row," system if possible, in order to avoid using the hoe. Canes are allowed to become too thick in the rows, and by giving more room, with clean cultivation, larger and better berries will be secured, with greater yields. By burning the old canes in winter and applying fertilizers at this season, thinning out the canes, keeping the rows clean and allowing no weeds or grass to grow among the canes, the grower will secure a much larger profit from his fruit next year.—Times Bulletin.

HOW TO RAISE ONIONS.

WHILE onions grow on all rich soils, one should never attempt to grow them largely without a good market. The other requisites essential to success are plenty of manure, good seed, clean culture and careful handling.

The Soil.—Clay loam or muck, such as is found in most swamps, will do if dry, and some alluvial soils will do equally well. The land should be well manured and ploughed in the fall, and, if necessary, drained, so as to make the ground dry and warm. In the spring, as soon as the frost is out, the ground should be cross-ploughed, but shallower than before, then rolled and harrowed.

Sowing.—For early sowing in mucky or swampy ground, Wethersfield Red and large Yellow Dutch are good varieties. If not early, substitute Early Round Red for the Wethersfield Large Red. If the soil is strong and dry sow two-thirds Danvers Yellow Globe and balance, Early Round Red. Sow only large and new seed. After sowing, the ground should be rolled with a hand-roller, for the seed will come up more regular, and it will also facilitate after cultivation. It is generally found that the early-sown onion—other things being equal—does the best.

Weeding.—As soon as the onions are through the ground the weeding should commence. The oftener the ground is stirred the better for the crop. The ground should usually be hoed about once in two weeks during the earlier part of the season, and the weeding must be governed by number and growth of weeds.

Harvesting.—The onions may be pulled by hand, or by using a stout fine-tooth wooden hand-rake, raking six rows together. They should be turned in a few days in order to cure as soon as possible. When the tops are dry they should be trimmed with a knife or pair of shears, cutting the roots off also, and leaving an inch or so of the top on. Any green ones should not be cut, but left to ripen. They should be stored away in a dry, cool place, away from frost, and spread enough to keep them from heating.

Tiverton, Ont. A. H. CAMERON.

EFFECTS OF FERTILIZING ON PEARS.

THERE is no fruit that responds so readily to good fertilizing as pears, and where old varieties seem to be running out a new lease of life is given to them by applying ground bone and potash. Without doubt these are the two essential constituents of the soil that the pear trees exhaust, and when they can no longer draw them from their surroundings they refuse to produce salable fruits. After many years of experience, says a recent writer in an exchange, I can safely say that all of the pear trees of an old orchard can be revived almost beyond recognition by the annual application of potash and ground bone. The process I have found the most serviceable is to apply about 400 pounds of muriate of potash with 800 pounds of ground bone per acre each year. One-half of this mixture is applied in the fall and the other half in the spring at plowing time. Crimson clover seed is sown with the fertilizer in order to give the necessary nitrogen. This repeated years in succession brings the orchard up to a condition where excellent crops of pears can be depended upon every season.

Lately many of our standard pears have been degenerating, and even upon good soil they fail to produce the paying crops that they should. The fruits are small, tasteless, and apt to be knotty and poor generally. Our fall fruits are unusually poor and insipid, and if better pears could be produced at this time of the year there would be a better general demand. Our fall and winter pears are susceptible of higher and more delicious flavors if we only give them the right cultivation and fertilization. The comparative difference between the fruits of the same variety of pears taken from the same orchards is sufficient to convince one of the truth of this remark. Not a few are so poor, that one can hardly believe that they came from the same stock as other delicious specimens plucked from trees that have been fertilized for several years. Herein lies the difference.

It is a crying need of the times that orchardists should get out of the old ruts, and educate the public up to a love for better fruits In this way the consumption will increase. We can only do this by abandoning the idea that apple, pear and other orchard trees will take care of themselves. They will not, and never did, properly. They need cultivation and fertilization just as truly as do the vegetable, grain or other farm products. Fruit growing requires as much scientific study as grain growing or cattle breeding, and the sooner this is generally recognized the better it will be for the industry.

GENTLEMEN OR LADIES interested in forwarding the interests of Canadian horticulture, by extending our membership, will please send postcard for sample copies, circulars, etc., for free distribution.

NOTES FOR MAY MONTH, 1895.

THE following notes were suggested by the meteorological peculiarities of the month of May, and by some of the effects thereby produced. The chief peculiarities of the month were the intense heat of the first eleven days, and the high winds, and dry, cold weather of the following two weeks.

Successful fruit growing depends largely upon the stability of the normal range of temperature. Any excess above or below that range, especially during the growing season, often means partial, and sometimes total loss of a valuable crop; and this range was exceeded to an extraordinary extent during May month.

When the following figures are carefully examined and compared there seems good reason for believing that the great injury to the fruit crop this season should be attributed much more to the extraordinary heat of the first eleven days than to the frosts which followed.

The latter part of May is generally much warmer than the early part. The highest temperature for the month having occurred, during the past sixteen years, twelve times after the 20th, and the remaining four times before the 15th. The average of mean temperature for the month for the same period was 53 24°. Now, the mean temperature of the first eleven days of May this year was 64 74°, or a daily temperature of 11.5° above the average for May month for the past sixteen years, and the mean maximum temperature, which was 78 71° for these same eleven days was exceeded in only two June months and four July months for the same period. The cold, as measured by the thermometer during the following two weeks was not excessive. The lowest temperature registered for the month was 27.2° on the 16th. Lower temperatures were registered in each of eight May months during the previous fifteen years.

The first eleven days of May were, therefore, abnormally hot, the mean temperature being 11.5° above the normal range. The re-action then set in and the succeeding eleven days were abnormally cold; the mean temperature being only 42.52°, or 10.72° below the normal range, a decline of mean daily temperature from the first to the second period of 22.22°.

It is not surprising, therefore, that the premature and unnatural development of bud and blossom which took place in the early part of the month should have been severely checked by the cold winds and low temperature of the succeeding eleven days. Indeed, it is a matter of great surprise that more injury was not done. Had the temperature of the first eleven days been about as usual for the season, vegetation would not have been so far advanced and the injury by the frosts which followed would have been but little noticed, as the frosts, as before noted, were not unusually severe.

If this branch of meteorology had been better understood by many of those

who sent reports of injury to the fruit crop, the reports might have been much more accurate, but so long as statements of this nature are based on *personal sensation* or on the *thickness of ice* formed on still water, and not on the careful reading of first-class thermometers properly placed, such reports will be of little value.

The estimates made of the injury to the fruit crop were mostly based on the supposed intensity of the frost on the night of the 12th, but the minimum temperature of that night was only 20.8°, and was not as low as on other nights which followed. On four nights during the second period referred to the temperature was two or three degrees lower than on the night of the 12th, and these were the nights on which the greatest injury occurred, because injury to vegetation is mostly in proportion to the *severity* of the frost without regard to its duration, while the thickness of ice formed on still water is mainly in the proportion to the *length of time* the temperature is below the freezing point.

As a basis for future estimates of damage by spring frosts I would suggest that each of the conductors of our local experiment stations be supplied with a set of meteorological instruments necessary for this purpose, and that such instructions be given the conductors as may enable the Fruit Growers' Association to obtain and publish a more satisfactory report than has hitherto been obtainable.

The meteorological service of Canada will, I believe, supply the necessary instruments, forms, etc., gratis, on certain easily-fulfilled conditions.

The temperatures given in the foregoing paper are correct for this locality only, but the same principles apply in all directions.

Lindsay. THOS. BEALL.

The alliums, grape hyacinths and jonquils look the best when grown with from three to six bulbs in a pot, their delicate flowers looking the best when grown in masses. The hyacinths and narcissus can be grown singly, or a couple can be planted together in a five or six-inch pot. If brought up from the cellar at intervals of two weeks, ten or a dozen pots will keep a window bright all winter with bloom, as a pot will average to remain a beauty nearly a month in a moderately heated room.—American Agriculturist.

A Home-made Potato Sorter.—The sketch herewith shows a home-made device for rapidly and easily sorting potatoes as they are taken from the rows. The upper incline has crosswise, rounded strips, with spaces between as a flooring. As the potatoes pass down the incline the small ones fall into the lower incline, the large tubers falling into one basket and the smaller ones into the other. The rounded strips do not bruise the potatoes as they gently pass down from one end to the other.—Amer. Agr.

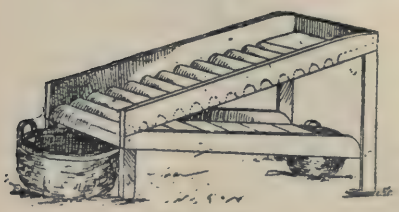


FIG.—848.

SET SMALL FRUITS IN AUTUMN.

Those desiring to start a small-fruit plantation will find fall setting preferable to waiting until next spring. Other duties are more pressing then, and this work is apt to be delayed. Plants set out in the fall are ready to start with other vegetation at the first appearance of favorable weather. Young roots and new buds will have started before the ground is in good condition for spring planting. Breaking these will stunt growth and produce a lack of vitality. Fall setting gives time for the callousing of wounded rootlets. In setting, see that the earth is closely packed about the roots, leaving no air spaces. Select good, sound plants. The illustrations represent two types. The one at *a* is a root cutting; *b* is what is called a sucker. Use only the first kind. Many failures come from planting suckers. The essentials for good results are good location, well-drained, thoroughly pulverized rich soil, and good, sound roots, set in their natural position. Blackberries, raspberries, currants, gooseberries and grapes can all be planted this fall before a general freeze-up.—Amer. Agr.

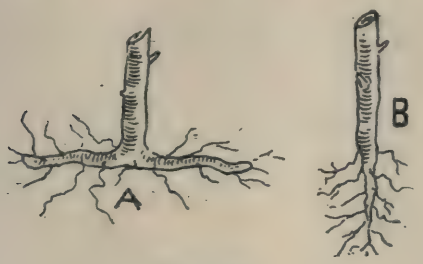


FIG. 848.

For Drying Fruit.—Sun-dried fruit possesses a flavor that is wanting in fruit dried by artificial means, but one may well be willing to dispense with some of this sun-kissed flavor if it is accompanied by the dirt that is so common an accompaniment of fruit that has been exposed out of doors to the attacks of flies and the presence of flying dust. The illustration shows a fruit drier for outdoor use, that can be easily made, and that will perfectly protect whatever is placed within it. A light frame, with a hinged cover frame, is made of inch-by-inch stuff, or of stouter wood if the frame is to be of large size, and covered upon the top, bottom, sides and ends with wire mosquito netting. If the drier is of considerable length, cross supports will have to be placed across the bottom. If somewhat soft berries are to be dried, it will be well to place at first a few sheets of paper over the bottom, on which to spread the berries Light stakes driven into the ground, with crosspieces, make suitable supports for such a fruit drier.—American Agriculturist.

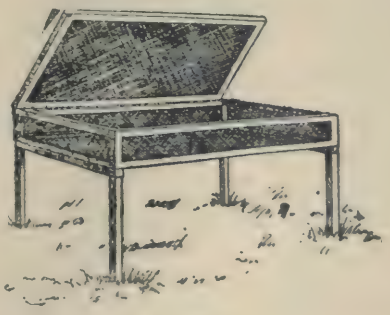


FIG. 849.

The Garden and Lawn.

THE BANANA.

Musa Ensete.

THE majestic Abyssinian Banana is one of the best species for greenhouse cultivation or outdoor decoration, its rich, broad foliage being tougher than other varieties, enduring our high winds to better advantage.

It is easily raised from seed when sown in a greenhouse, development being simply a matter of root room, water, and rich potting material.

Small plants may be grown in any window until too bulky, when, if bedded in the open ground, they will give grand results, if liberally supplied with manure and water. Being so easily grown, it hardly pays to winter them, which may be done, however, in a light, warm cellar. To do so, after the first frost cut off the foliage three or four feet from the ground, lifting with all the root possible into a box or barrel, water only sufficient to keep the roots from withering, bedding as at first.

The subject of this photo reached over three feet in height the first season in a large pot, transferred to a half-barrel it grew to eight the second, after which it was planted out about the end of May in a rich compost of well-rotted manure, loam and mold. The outdoor growth was more robust, and when cut down by the frost it was upwards of twelve feet high, with the stalk measuring over four feet in circumference at the ground.

This grand specimen stands in the centre of a bed of some one thousand plants of the New Hybrid Everblooming Cannas, with a border of Caladium Esculentum.

As outside of Canada we are looked upon as a land of toboggan slides and ice palaces, this view may at least take the chill off that impression.

It is only fair to add that this is the first crop ever grown on this ground, which is a piece of partly drained cedar swamp with springy bottom, broken for the first time in the summer of 1894. The bed is also situated on the north side of a six-foot terrace, the row of large oaks at the right cutting off the afternoon sun. The view faces the north.

Simcoe, Ont. H. H. GROFF.

Fig. 850.—A Canadian-Grown Banana Plant.

GROWING HYACINTHS IN WATER.

TO be successful in the cultivation of hyacinths in glasses during the winter season, it is necessary to commence operations early in October, so as to give the bulbs an opportunity to properly develop their roots before they start into growth; and in order to obtain a continuous succession of bloom it is absolutely necessary to make successive plantings until the desired quality is secured. When the bulbs are procured they should be spread out in a dark cool situation, and examined occasionally, so that as soon as they begin to throw out roots they can be placed in the glasses. By selecting them in this manner a continued succession of bloom may be enjoyed from January until May. In cultivating hyacinths in glasses the single varieties are mostly used, as they do better than the double varieties.

In purchasing glasses those known as Tyes' pattern and those of a dark color are to be preferred. The bulbs should be placed therein as soon as they begin to form roots In the bottom of each glass put a small piece of charcoal, then fill with rain water so that it will barely touch the bottom of the bulb when placed on the top. Then remove to a dark, root cellar—no other place will answer as well—for two or three months, after which they should be gradually brought to the light until they are placed in the lightest situation to be had, and given as much fresh air as possible. When the plants are growing it is advisable to turn them occasionally, and what water is lost by evaporation must be supplied.

The flowers will remain in perfection a long time if the plants are kept free from dust and placed in a cool temperature. As soon as the flowers begin to fade let the whole plant be thrown away, as bulbs that have been grown and flowered in water are altogether useless for further growth. The twelve best single hyacinths for cultivation in glasses are Mimosa, Grand Gilas, Porcelain, Sceptre, Robert Steiger, Sultan's Favorite, Madame Hodgson, Norma, Madame Talleyrand, Themtocles, Alba Superbissima and Anna Caroline. The best double for the purpose are A la Mode, Bouquet Tendre, Blocksburg, Frederick the Great, Grand Sultan and Marie Louise.—American Agriculturist.

Cabbage Worm, to Destroy It.—Get some fine salt, dry it perfectly dry on the stove or in the oven, then take it out with you into the garden. In the evening, when the dew is on the plants, take a small pinch of this dry powdered salt and dust it on each head; the dew will dissolve it and a slight rain will carry it in among the leaves of the cabbage or cauliflower, and it kills every caterpillar it touches and doesn't hurt the plants any. Do this about once a week. It is quick, simple, and effectual.—Gardening.

CHRYSANTHEMUM CULTURE.

THESE beautiful flowers from the land of "Japs" are among the easiest to grow, if even ordinary skill is exercised. Here is the manner in which they are grown in England, as reported by Illustrated Gardening. About November select stout shoots that have not been drawn up weakly through the plants being too much crowded. Put them singly in small pots, or several together in a larger ones, three parts filled with fine loam, sand and a little leaf-mould, with a layer of sand on the top. Stand the cuttings on a moist bottom in a cool house or pit that can be kept at a greenhouse temperature, cover with a propagating glass, and keep moist. Here they will root in the course of six weeks without the tops being at all drawn in the way that is unavoidable when they are subjected to heat. As soon as the cuttings are well-rooted remove the glasses, and put them singly in three-inch pots, using soil similar to that in which they were struck, but with less sand in it. When top growth fairly begins pinch out the points of the shoots and treat generally, in the matter of air and water, as required for the soft-wooded greenhouse plants. About the end of March move them into six-inch pots, well drained, using soil well enriched with rotten manure. In April put them in cold frame or pit, where they can be kept close to the glass and have plenty of air, which means to just keep out the frost on the sharp nights that often come about that time. At the beginning of May inure them to the open air by taking off the lights in the daytime; a little later on stop the shoots, and stand the plants out in full sun, with the pots plunged in ashes, not too close together. In June, before they get at all pot-bound, move the plants into their blooming pots, which may be from ten to twelve inches in diameter, according to the size they are intended to be grown to. Use plenty of drainage material and do not make the soil too fine; put more rotten manure in than most plants would bear, and a good sprinkling of sand. Tie the shoots well up to sticks so as to keep the centers of the plants open, and plunge the pots in ashes, standing them far enough apart to prevent their being in any way drawn. Syringe overhead every afternoon in dry weather; see that

FIG. 851.—ANEMONE-FLOWERED CHRYSANTHEMUM.

the soil never gets dry so as to cause the leaves to flag in the least, and in six weeks after potting begin to give manure-water each alternate time they require watering, using it somewhat weak at first and stronger as the season advances. See that the shoots are kept well supported with sticks strong enough to prevent their being broken by the wind. In autumn, as soon as the buds are large enough to admit of thinning, this must be attended to, or the flowers will be small. It is not well to take the plants indoors sooner than necessary, but do not let them remain out to get frozen. When housed they must not be stood too close, and should have plenty of air day and night, with a little heat turned on if the weather is frosty. If very big flowers of the large varieties are required, the plants should be confined to from three to five shoots each with all buds removed, except one to each shoot. If miniature plants in small pots are wanted, it is best to plant some out in the open ground early in summer, and when the flowers are set bend the shoots down and layer them in the soil; in a month or five weeks they will have made enough roots to allow of their being cut from the old plants and put in six-inch pots, and if well supplied with manure-water they will bloom well.—American Agriculturist.

The planting of spring-flowering bulbs is in order. All varieties of hyacinths, tulips, crocuses and snowdrops that do well in the house or greenhouse in the spring do equally well planted out of doors. More than that, many varieties that are hardly good enough for pot culture grow and blossom beautifully when planted out in the garden. If you want to fill your flower beds with hyacinths or tulips in set fashion, each variety all of a size and the plants exactly so far apart, then you must get good quality bulbs to insure evenness in size and opening; but if it is a gay ribbon, a brilliant and prolonged display you want, then plant common mixed bulbs, the hyacinths by themselves, the tulips by themselves, thickly and in six or eight inch wide belt, and you are apt to have a fine display of gorgeous color from early till late, and it looks well. The polyanthus narcissus are not hardy on Long Island, but the single and double daffodils, jonquils and orange and sulphur phœnix sorts and their allies are, and everyone of them is both beautiful and desirable.

Pruning Roses.—A pleasant writer in a foreign journal supplies food for thought for those who would like to know how to prune roses: Pruning, too, is quite a woman's work, provided her heart is hard. A well-pruned rose garden looks such a wilderness in March, as wheelbarrow after wheelbarrow of rose wood goes away. No rule can be laid down for this work, practical observation is the only recipe, and knowledge of the habit of the variety. Amateurs usually fail by doing too little, and leaving too much badly ripened wood and weak growths crowded together. A friend unused to rose growing prayed her husband just to spare her one bed so that she might have a few early blooms. He was a silent man; smiled, and did her bidding. She got her early blooms, but oh! such frost-injured, insect-mangled specimens that she could not bear to look at them. Next year she used a sharp knife fearlessly, and then had "glorious roses."

CACTI.

MY best success with fresh cacti received in summer was as follows: I had a common frame with sash hinged and raised at all times except in damp or cool weather. On the hard dirt bottom six inches of sand were placed. After the roots were all cut off the plants were placed on the surface of the sand and showered occasionally, so that the surface of sand was dry soon after, but the bottom was rather moist. In two months they made masses of roots equal to the size of the plants; in fact, roots as good as you could want on a strawberry plant; these could be lifted with sand attached and potted in rich soil. To illustrate, take a small fresh plant, say of the echinocactus family, and suspend it an inch over a glass of water—watch the result.

In a bed as described, three feet square, planted close with *Echinocactus cæspitosus*, I had from fifteen to twenty-five flowers open every day for over six weeks, hundreds of beautiful pink and magenta blossoms, three inches across and sweet-scented, open to the glare of the sun for days. *E. Simpsoni* produces its rosy flowers as profusely, as many as eight being on a plant the size of a hen's egg.

Amateurs should not be discouraged. Investigation may perhaps show that too much water at times and not enough at others may be the cause of failure, but in most cases it is poor drainage. To the beginner I would say, put a four-inch board on a pair of ten cent brackets in a south-facing window and set thereon twelve saucers, then twelve small pots in them and a plant in each pot. For soil I take one-half sharp sand and the balance of rich loam with some lime or old plaster, fill the pots one-third with charcoal for drainage. Let the plant rest immediately on sand or small pebbles, and water once, no more, until growth begins.

Cuttings should be placed in the sun for three or four days before planting them and kept about dry until rooted. They root best in clear sand. The safest rule is to err on the side of dryness.—Gardening.

CANADIAN FRUIT IN SCOTLAND.

EDITOR CANADIAN HORTICULTURIST:

Sir,—Yours of 24th Aug. is just received by me. I note about the trial of cold storage for the tender fruit, and by the papers I see it did not prove quite a success; but I think it must in the end if the storage is good, and the time taken to come over not too long. Yesterday, when in Glasgow, I called on Messrs. Simons, Jacobs & Co., large fruit dealers. On Tuesday they had sold a large lot of American apples at a price that they told me would net $1.25 to the shipper clear. There are three lots more to arrive and will be sold to-morrow. They are the largest dealers in Britain; they tell me Mr. Simons has met you. He tells me Scotland is a better market for American fruit than England, and just now there is a large demand for American fruit. One thing we must be careful of, that there is no false packing. The papers here and the agriculturist are always ready to take up that cry, and do their utmost to make the public think nothing is good that comes from America. You would be surprised at the amount of opposition there is to the coming into this market of American produce. They don't put a duty on it but they try to injure the trade in every way possible. See how they began to speak of our cheese. The same thing is true in the ham and bacon line. The trade in fruit here ought to be good. I paid in Glasgow, yesterday, 10d. a lb. for tomatoes; 2/ a lb. for grapes; 8d. a lb. for pears. I don't see how the people can afford to buy fruit at these prices. Mr. Simons told me they always did better in Glasgow with American fruit than in England, and they felt the need of a faster line of steamers coming into Glasgow. I think this would be a good point to try a small lot at shipping them to Simons, Jacobs & Co., Glasgow, as a trial, and the sooner the better; if I knew they were coming I would tell him about them. I am now going to London, but as your letter has been so long in reaching me there is little chance of my being there when any fruit you might ship after this reaches you, would arrive. The best way, I think, is to make up a small shipment of choice fruit, packed as I suggested, of good keeping apples, and ship them to Glasgow to this firm, write them full particulars by mail, and let us see what the result will be. I will join you and any others in shipment, say, of not more than 50 bbls. I leave it all in your hands, as you know far better about this than what I do; only I am very desirous to see all the trade done with this country possible. If plums and pears could be got in also; the grapes they say will not sell, as our grapes lose their flavor in the trip. I can't see how this is, and the attempt now being made must be continued; it will be a success. I may remain over here all the winter, staying in the South of France, coming home in the spring; so if there is anything I can help you on in any way I shall be happy to do so. Write me to my London address, that will always find me.

Yours truly,

Bridge of Allan, Oct. 10th, 1895. JOHN PENMAN.

PROGRESS OF THE NAPANEE HORTICULTURAL SOCIETY.

IT may interest some of your readers to learn what this—a first year Society has done, and what we think of ourselves as a Society. The Board of Directors are interested in the welfare of the organization, and includes our two leading florists. This, combined with the fact of possessing at our head an energetic President of large experience in flower cultivation, makes the success of the Society assured.

We have not during this first season's operations, branched out as far, perhaps, as was anticipated by a few members, but have considered it wiser to go slowly at first, gaining some experience and husbanding our funds to some degree, until we know better our business. Our spring distribution consisted of canna and gladioli bulbs, and sweet pea seed; while our fall distribution has been an importation from Holland of tulip, crocus and hyacinth bulbs, a chrysanthemum and a primula plant. Also, as an inducement to early renewals of membership for 1896, and for new members paying by November 1st, we offer as a premium a subscription to "Mayflower," carrying a grant of 12 bulbs to each, and up to date a large number have availed themselves of this liberal offer. We should be glad to learn through the columns of your valuable magazine, the best course to pursue in the way of giving exhibitions or flower shows. We had none this first year, but propose having one annually hereafter. A very successful work, and one, we believe, much appreciated, was the distribution of flowers on a certain Sunday to all the churches, for the purpose of decoration. This will be another annual event. The thanks of the Society are due Mr. Beale, of Lindsay, for much valuable instructions during the period of organization; to Mr. James, Deputy Minister of Agriculture for information relating to departmental requirements; and to Mr. Herrington, one of the Society's Directors, for his active assistance in furthering the work of the Society.

J. E. HERRING,

Napanee. *Sec.-Treas. Napanee Horticultural Society.*

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

APPLES FOR LIVERPOOL.—In order to be in a better position to compare markets, the writer has made up 100 cases of fancy apples, packed in the same manner as those for Sidney, and shipped them by the Allan Line to Mr. P. Byrne, Ontario Government Agent, Liverpool. These are entirely a private venture, but they will serve to enable the Secretary to give the public a more satisfactory report, after comparing the returns from Sidney with those from Liverpool.

CANADIAN APPLES IN ENGLAND.—As will be seen in the market reports our apples are now in great demand in the English markets. The very hot weather prevailing in England during the latter part of the summer, has so ripened the English apples that they were practically out of the market by the middle of October, when, suddenly, Canadian apples almost doubled in value. Greenings which had only brought from 7/ to 9/, were sold at 14/6 to 15/9, and Baldwins at 17/ to 18/. Those growers who have not sold their apples too soon, will now reap an advantage.

APPLES FOR AUSTRALIA.—At the suggestion of our Board of Control, the Secretary has collected a trial shipment of choice Canadian apples for Sidney, N. S. W. The price there is good at this season, and apples are forwarded to that port from California. It would seem, therefore, possible that a market may open up for Ontario apples in that direction, for our stock will open out much firmer than the Californian. The varieties sent were chiefly Cranberry Pippins and Baldwins. All were selected with the greatest care, according to our Dominion grade No. 1, and wrapped in tissue paper. They were packed in

apple boxes, containing between fifty and sixty pounds each. They were addressed to Mr. J. S Larke, Commercial Agent for the Dominion in Sidney, who will place them to the very best advantage.

THIS YEAR'S FRUIT CROP has been quite satisfactory to those growers whose location was favorable, and sheltered from the late spring frosts. All fruit has been of superior quality, and the prices have ruled unusually high. Corcord grapes have averaged 2½c. to 3c. a pound, and fancy varieties 4c., and so with all fruits; the price has been good, and the expenses comparatively light.

Apples in Ontario are better in quality than they have been for years, so little spot, large and high colored; while the trees, where they are bearing at all, show indications of a return to their normal condition of fruitfulness, such as prevailed eight or ten years ago.

DEATH OF MR. E. W. BULL.—All fruit growers will regret to learn of the decease, on the 27th of Sept. last, of the originator of the Corcord grape. This variety leads all varieties for productiveness and profit, and this year holds its place alongside of Rogers and Niagara for price.

Mr. Bull was born in 1806, and so he was ninety years old when he died. The original Concord vine was found by him, a hedge row, and removed to his garden; the fruit was first exhibited in Boston in 1895.

The Concord is the parent of the following:—*Black*, Campbell's Early, Cottage, Moore's Early, Worden, etc; *White*, Golden Concord, Martha, Niagara, Pocklington, Lady; *Red*, Woodruff and Jefferson; besides many others.

A HINT TO OUR LOCAL HORTICULTURAL SOCIETIES—A good plan of collecting the members' fees has been adopted by the Lindsay Horticultural Society by which all trouble of visiting members and asking for the fee is being avoided. The following is a copy of a notice which is printed on a post card and sent to each member:—

"The Board of Directors of the Lindsay Horticultural Society beg to inform you: That the membership fee of $1 for 1896, if paid before the 1st of October, secures to each member, in addition to membership in this Society,

"1st. A certificate of membership in the Fruit Growers' Association of Ontario for 1896, which entitles the holder to the CANADIAN HORTICULTURIST for that year, and a bound copy of their annual report, and also a share in the annual distribution of plants of that Association, and

"2nd. To the following bulbs, which will be ready for delivery about the 1st of October, viz., (*a*) Hyacinths—two bulbs each of Red, Yellow, White, Blue, and Rose, and six White Roman—sixteen bulbs.

"(*b*) Tulips—five each of Parrot, Bizarre, Bybloom, and Scarlet Gesmeriana—twenty bulbs.

"All the bulbs will be of the best quality obtainable, and imported especially from Holland. The foregoing lot of bulbs is only guaranteed to the first one hundred members who pay their fees before the 1st of October next.

"J. C., President. F. F., Secretary. Lindsay, August 16, 1895."

THE ENGLISH APPLE MARKET.

Our readers may be interested in reading a few of the reports of the English apple market which come to hand during the past month.

Frank Rand, of Spitalsfields Market, London, says on the 5th October :—We beg to advise that since we last communicated with you we have experienced a considerable improvement in the apple trade. At our sale of Nova Scotian apples yesterday, good colored Gravensteins realized from 11/6 to 13/6, and Ribstons and Kings up to 16/ per barrel. If you have any really choice Canadian apples, such as Kings, Ribstons, Twenty Ounce Pippins, etc,, we think there would be no trouble in realizing these prices ; but as only best fruit is wanted we cannot advise shipments of green or small apples.

Messrs. Woodall & Co., Liverpool, write under date October 12th :—Of the 9467 barrels received this week, all but 2522 barrels were from New York State. The fruit—especially Baldwins—showed much-improved color and quality, and all varieties except Kings were landed in fairly good condition, causing an excellent demand, and at Wednesday's sales an advance of 2/ to 3/ was readily paid. This advance was scarcely maintained yesterday, when about 4000 barrels, ex "Teutonic" were offered, but the market closed strong at last week's extreme rates to 1/ advance. The first arrival of Albermarle Pippins consisting of 350 barrels, attracted keen competition, and although not fully matured, being very green, were clear-skinned and free from scab. The best sold from 25/ to 33/6, while smaller sold from 14/6 to 22/6 per barrel. This shipment confirms the report that the crop is fine, and there is every prospect of their realizing good prices. Quotations for the week for sound : *New York*—Baldwins, firsts, 15/ to 19/ ; seconds, 12/6 to 14/. Kings firsts, 18/ to 22/6 ; seconds, 13/ to 16/. Greenings, firsts, 11/ to 13/3 ; seconds, 9/ to 10/6. Albermarle Pippins, firsts, 25/ to 33/6 ; second, 14/6 to 22/6. *Boston*—Baldwins, 13/6 to 14/9 ; seconds, 10/ to 12/. *Canadian*—Colverts, 13/6 to 14/9 ; Holland Pippins, 13/9 to 14/6 ; Ribston, 14/ to 18/9 ; Snow, 16/ to 17/9 ; Twenty Ounce, 15/ to 18/6 ; Greenings, 10/6 to 15/3 ; Baldwins, firsts, 15/ to 18/ ; seconds, 11/ to 1/4. Slacks sell 2/ to 4/ below these quotations.

Under date October 16th Messrs. Woodall cable their Montreal agent : Market opened very strong and continued so. Shipments have been limited. Good sound fruit commanded good prices. Baldwins, 16/ to 18/ ; Greenings, 14/6 to 16/6 ; Kings, 22/ to 23/6.

Messrs. J. McKittrick & Co., of Liverpool, cable their Montreal agent, under date 18th of October, as follows : No Baldwins or Spies offering. Greenings sold from 16/ to 16/6 ; Kings, 21/6 to 23/. Market very firm with strong demand.

The Montreal Trade Bulletin of October 18th says :—Winter apples are beginning to arrive in large quantities, sales of which have been made here in round lots at $2 for Greenings and $2.25 for Reds. American buyers have taken a few lots of Talman Sweets for Detroit and Chicago account, paying $1.70 to $1.85 f.o.b. in the West. A lot of 1500 bbls., the large proportion being Greenings, was sold in the West to a Toronto firm at $1.70 f.o.b. Quite a few orchards have been contracted during the past week at $1 Greenings and $1.25 for Reds on the ground, fancy sorts having commanded $1.50. In Maine, buyers are paying $1.25 for the fruit on the ground, although the crop this year has a larger proportion of Greenings than usual.

The English correspondent of the same journal writes concerning the English market for apples :—The truth of what I recently said about apples is shown by sales of those arrived. Shippers have done well to withhold early apples, and bad figures have been realized for those that were sent, but even of this fruit the best has reached decent figures, and this will be more the case when the winter stock comes in, in a few weeks. What is also affecting the market for apples just now is the abundance of stone fruit, following on

a plethora of bush and ground fruit, all of which will have disappeared with the arrival of wintry weather. Apples from English orchards are selling now at from ½d. to 1d. per lb., but this is because they are poor and wasty, and largely unfit to eat, or tasteless; but even now, as high as 4d. and 6d a pound is charged in the shops retail, and correspondingly high prices wholesale. There is not an abundance of good fruit, and there is hope for shipments of the best from Canada, But I do not expect to see anything but low rates for inferior fruit. The experiment of sending tomatoes from Canada I will deal with next week. It is a risky business, with our immense available supplies.

Messrs. Simons, Jacobs & Co., of Glasgow, cable under date October 22nd, 1895:—Market for *good, sound* fruit steady. Prices in some instances a shade better than they have been. The market opened firm and closed the same; demand good. The following quotations are for No. 1 sound Baldwins and Greenings, 16/ to 19/, Kings, 21/ to 24/: poor and wasty fruit weak and inactive.

Garden and Forest of New York, under date October 23rd, says;—Among pears now in season are spicy Seckels from Rochester, New York, at fifteen cents a quart. Showy Comice, the best-flavored of the larger sorts now offered, the greenish-yellow Easter Beurre, and the medium-sized russet Winter Nelis, all range from seventy-five cents to $1 a dozen for the best. Quinces are becoming scarce; and the best in the retail stores $6 a barrel. Among the few peaches still arriving are good specimens from western Maryland and Pennsylvania, and some choice White Heaths from the Hudson River district. These sell in the fancy-fruit stores at fifty cents a dozen. Selected King apples bring $5 a barrel at retail, and Albemarle Pippins $6. Apples generally are advancing in price, as the European crop is not so large as anticipated, and the high quality of the American crop has been lowered by recent unfavorable weather. The best grades of Alexander and Snow cost, in wholesale lots, $3 to $3 75 a barrel, and Jonathan and Alexander $3 and upward. Small Lady apples, not yet in their brightest colors, cost forty cents a quart. The showiest objects now seen among the best collections of fruits are the orange-red Japanese persimmons; they cost sixty cents a dozen. Jamaica oranges are being hurried on the market at the beginning of the season for high prices, many of them but half-grown, green and sour. As a consequence, prices are lower and likely to fall below the paying point. There is a steady demand for Alligator pears, and one of the fancy-fruit stores, on the arrival of a shipment of this fruit, sends notice to two hundred regular customers. The fruit at this time is coming from Nassau, and sells quickly from twenty-five to thirty-five cents a piece, and the supply is never as great as the demand. A remarkable sale of figs occurred here on last Wednesday, when $40,000 worth of this fruit was sold at wholesale auction in one hour. Prices ranged from 6⅞ to 15½ cents a pound, and on the succeeding day the extremely high price of 19⅞ cents a pound was reached. Thirty-four car-loads of California fruits were sold here last week, mostly Tokay grapes. The last German prunes are now shown and cost seventy-five cents for a package containing three dozen fruits. Extra large-sized chestnuts, from New Jersey, have sold as high as $12 a bushel, and bring forty cents a quart at retail.

Messrs. Woodall & Co., of Liverpool, writes:—Of this week's arrivals about 3,000 were not landed in time to be disposed of, but the quantity was sufficient to test the market, and it has demonstrated beyond doubt that however large the English and Continental crops may be they do not prejudice the sale of good varieties of American and Canadian fruits. The quality and condition of arrivals from both places has been all that could be desired, and although no material advance can be quoted, there was an active demand at last week's extreme rates, and net results will be more satisfactory than any this season, there being an absence of slack and wasty barrels. Greenings especially have shown excellent quality, and the best realized an advance of fully 2/ per barrel. Kings, on the contrary, are not generally up to the mark, being doubtful in condition, and without their usual brilliancy, there were some bright exceptions, and up to 24/6 was touched for Canadians. A further arrival of Albermarle Pippins was scarcely equal to that of last week, but realized a ready sale at 27/ to 28/, and a few medium Newtown Pippins sold at 22/ per barrel.

Messrs. Simons, Jacobs & Co., quote to-day (Oct. 29th) Glasgow market as follows:—Market opened firm, and continued so throughout the day. Demand good. The following prices are for No. 1 sound fruit, Baldwins, 16/ to 19/; Greenings, 13/ to 16/; G. and R. Russets, 12/ to 15/; Spies, Seeks, C. Reds and Spits, 14/ to 17/; Kings, 21/ to 24/; Cranberry and Ribstons Pippins, 7/ to 10/, 20 oz. 15/ to 18/; Snows, 18/ to 21/.

Question Drawer.

Peach Growing.

753. SIR,—Is it the late spring frosts or the severe winters which make it difficult to grow peaches in certain parts of Ontario, and how low temperature will peaches endure?

A. M. TERRILL, *Picton.*

Both these conditions are barriers in the way of successful peach culture in most parts of our province, but the latter more especially, because when the temperature drops to more than 12° or 15° below zero, the fruit-bud of the peach is destroyed, and there are few sections where the thermometer does not drop lower than this. The spring frosts occasionally destroy the peach crop, as the tree blooms early and is usually subject to injury from that cause.

The Niagara Peninsula.

754. SIR,—Why is the Niagara peninsula better adapted for peach culture than other parts of Ontario which are quite as protected by water?

A. M. T., *Picton.*

The reason is because the northerly winds are tempered by coming across Lake Ontario, and because it has the advantage of having two lakes on its borders. However, the south-eastern part of Ontario, along the shore of Lake Erie, is almost, if not quite, as safe from injury by frost as the Niagara peninsula.

Palms in the Window Garden.

755. SIR,—Please give me full directions about growing palms in the window garden.

G. A. WINTERS, *Brantford.*

Reply by H. L. Hutt, O. A. C., Guelph.

There are a number of varieties of palms which may easily be grown as house plants. The following are a few of the points relating to their management which require special attention. They should be potted in well prepared, suitable soil. This may be made of equal parts of loam, vegetable mould, and sand. As a rule palms do best when somewhat restricted at the root. It is better to keep them in small pots, and re-pot into larger ones only when the roots become crowded. The roots should never be cut if it can possibly be avoided, nor should any part of the stem be buried when re-potting. Good drainage should be provided by means of broken brick or pottery in the bottom of the pots. Water should be given liberally and often enough to prevent the roots becoming dry. An occasional watering with liquid manure, made from cow manure, will help to impart a healthy appearance to the foliage. The

leaves should be frequently sprayed or sponged to remove any dust which may settle upon them.

The following are a few of the most desirable varieties for house culture: Latania Borbonica, which has large fan-like leaves; Seaforthia elegans, a taller grower, with long gracefully arching foliage; Cocos Weddliana, one of the smallest palms, with finely divided delicate foliage, and Phœnix reclinata, a variety with large stiff leaves reaching out well on each side.

Peach Sections of Ontario.

756. SIR,—In what parts of Ontario can peach growing be successfully carried on in a commercial way?

A. M. T., *Picton.*

As indicated above, the best portions are the Niagara peninsula, especially in those parts which have suitable soil, and the County of Essex. The soil most suitable for peach growing is a dry, well-drained, sandy loam.

Hardy Varieties of Peaches.

757. SIR,—Please name two or three of the best hardy varieties of peaches.

A. M. T., *Picton.*

Probably some of the native seedlings could be most relied upon to prove hardy in Ontario. Some seedlings of merit have originated lately in the County of Essex, as, for instance, the Tyhurst seedling and the McConnell seedling, and in the Niagara peninsula, the Bowslaugh's Late and High's Early Canada. This latter, however, is almost identical with the Alexander. Bowslaugh's Late has this year given a good crop of peaches, when most other varieties have failed. The Fitzgerald, which originated at Oakville, is a peach of excellent quality, and said to be very productive. Of American seedlings, the Crosby is highly commended as a hardy variety.

Pruning Climbing Roses.

758. SIR,—Should climbing roses be pruned every year in the same way as Hybrid Perpetuals?

R. H. L., *Kingston.*

No; the climbing rose should not be cut back like bush roses. The latter should be severely cut back, leaving only a few strong shoots, and these cut down to a few eyes. This should be done either in the fall or in the early spring. The climbing roses should be well cut back to three or four buds when planted, and thereafter only the strongest branches encouraged to grow. These should not be shortened unless weakly, but only thinned or spurred as may be necessary to direct the shoots where most needed.

Smith's Seedling Apple.

759. SIR,—I send you samples of four varieties of seedling apples for examination. The largest one is grown from seed of the St. Lawrence.

W. SMITH, *Minden, Haliburton Co.*

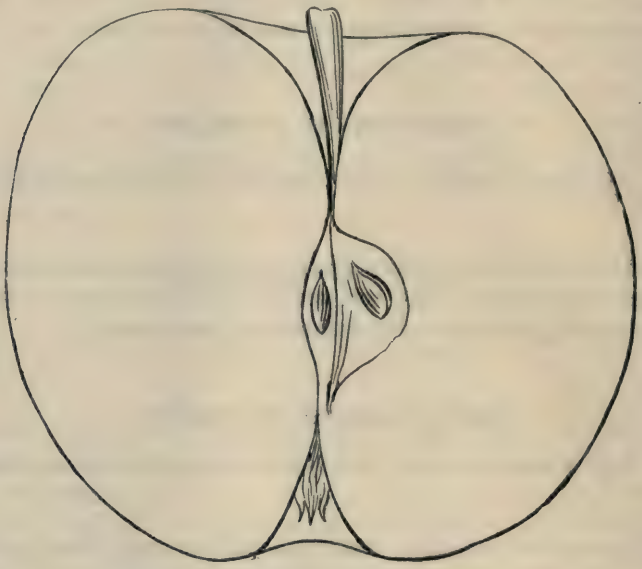


FIG. 852.—SECTION OF SMITH'S SEEDLING.

The smaller varieties are of little merit, but the largest one appears to be a valuable fall cooking apple; and, being evidently very hardy, should be of especial value for our Northern sections. It is above average size, splashed beautifully striped with red, and almost equal in appearance to the famous Gravenstein. Worthy of careful testing.

Pruning Honeysuckles.

760. SIR,—Do the honeysuckles need any pruning; Hall's honeysuckle, for example?

R. H. LIGHT, *Kingston.*

Yes, honeysuckles will be better of pruning. Some varieties flower on wood of the last season's growth, and these should not be pruned till the flowering season is over; when they should be well shortened back. Those which flower on the new wood may be pruned in early spring.

Green Mountain Grape.

761. SIR,—Should this vine be laid down for winter protection?

R. H. L., *Kingston.*

Nearly all grapes will produce more fruit if laid down and protected in winter. The hardiness of the Green Mountain has not yet been proved in Ontario.

Books on Fruit Farming.

762. SIR,—Would you kindly tell me, through the HORTICURTURIST, the titles, publishers and prices of the best book or books on fruit farming, adapted to Ontario. By so doing, you will greatly oblige,

ONE OF YOUR READERS.

"Thomas' American Fruit Culturist" is perhaps the best book for Canadian fruit growers. The author is the late John J. Thomas, of Union Springs, N. Y., and the conditions prevailing there are very similar to those in Ontario.

Seeds and Plants Wanted.

763. SIR,—Please tell me where Melilot clover seed can be purchased, and the price.

T. F. EMERSON, *Valentia.*

SIR,—Please inform me if any one, to your knowledge, has the Heebner raspberry bushes for sale.

Will those interested please reply.

A Good Peach.

764. SIR,—I want a peach of good quality, hardy and productive, that will mature about the last week in September or first of October in our latitude, which means, I presume, the last of September in Ontario. What would you recommend? What about Old Mixon Freestone?

JOHN KILLAM, *North Kingston.*

We have a peach in Ontario known as Stevens' Rareripe, which would probably ripen about the time required; a good sized, white fleshed, salable peach. Another is Bowslaugh's late, a variety originating in this section, and counted quite hardy and profitable. Old Mixon ripens close with Early Crawford, and Smock, our finest late peach, ripens about first week in October.

Our Book Table.

THE FOURTH REPORT of the Department of Agriculture of British Columbia, 1894, has just come to hand. Careful precautions are taken by this Department to prevent the introduction of insect pests. The reports from all parts of the Province are in detail, regarding crops, prices, weather, timber, water, soils, pasturage, fungi, insects, labor, etc.

November.

When chill November days appear,
The forest paths are strewn with leaves;
Like an uneasy spirit grieves
The wind, the naked boughs among.

The robin's farewell song is sung,
And on impatient wing he hies
To fairer scenes, 'neath warmer skies,
When chill November days appear.

When chill November days appear,
What matters storm or lowering skies?
I seek my heaven in her eyes,
When chill November days appear.

—J. Torrey Connor in "Mayflower."

WOLFE RIVER.

THE

Canadian Horticulturist

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THE DEMPSEY PEAR.

WE may be pardoned if, in again presenting the Dempsey Pear to ou readers, we seem to be giving undue prominence to this variety, because it is a fruit of Canadian origin. Unfortunately the artist has not done the pear justice in our colored plate which does not give either the correct shape or size. Since the colored plate was purchased, we have received a basket of the Dempsey pear from Mr. W. H. Dempsey, the son of the originator. They were beautiful specimens, and gave us a higher opinion than ever of the excellence, both of appearance and quality, of this pear. They also gave us an opportunity of taking a photograph of the variety, and an outline of a section of the pear, which our readers may take as being correct.

FIG. 853.—A PLATE OF DEMPSEY PEARS.

The Dempsey was originated near Trenton in Prince Edward County, by Mr. P. C. Dempsey, the late well-known Director of our Association for that district. It was produced from a seed of a Bartlett, fertilized with Duchess d'Angouleme. The tree is a good grower and quite productive. The fruit is firm and consequently would ship well.

Description : Fruit large, oblong, obovate, pyriform ; skin smooth, yellowish-green, with brownish-red cheek in sun ; stem about one inch long, set in a fleshy base, and with almost no cavity ; calyx nearly closed in a moderately deep uneven basin, core small. Flesh white, fine grained, tender, almost melting, with sweet delicious flower. Season, last of October, November.

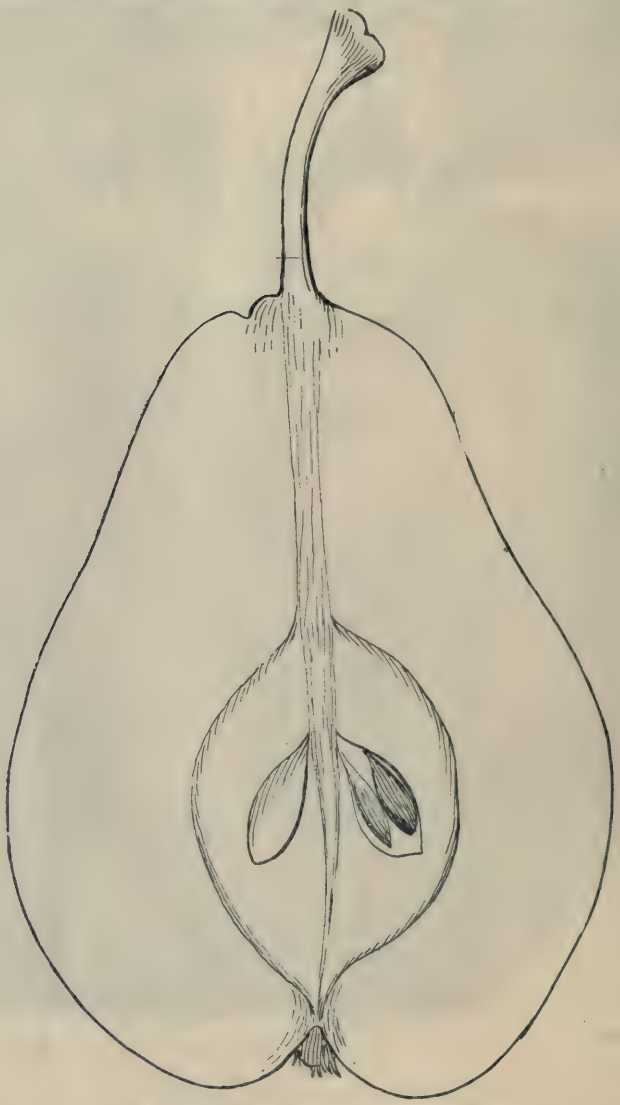

FIG. 854.—SECTION OF DEMPSEY PEAR.

A CHOICE COLLECTION OF HARDY ORNAMENTAL SHRUBS.

BY WILLIAM SAUNDERS, F.R.S C., *Director Experimental Farms of Canada.*

THE inquiry is frequently made both by visitors and correspondents, who have but a limited garden space, what are the best and most attractive shrubs for such limited areas. As a partial reply to this question, a selection of 12 varieties will be briefly described, each one of which, by its grace of form, its attractive foliage, or beauty of flower, or all combined, will afford much gratification to its possessor. The list is so small that many choice things are unavoidably omitted and no attempt will be made to include in this small number any of the very beautiful evergreens so desirable in every collection. These may be dealt with on a future occasion. Several of the most desirable of the shrubs in this select list have already been mentioned under ornamental hedges, but they are well deserving of special commendation also for the garden

FIG. 855.—LILAC CHAS. X.

or lawn. The illustrations used have been engraved from photographs of specimens growing on the Central Experimental Farm.

1. LILAC CHAS. X. *Syringa vulgaris Chas. X.*—Lilacs are among the best known and most beautiful of the spring flowering shrubs and are universally admired. They are easily grown and flower freely. Some varieties, however, produce flowers in much greater abundance than others. There are about ten species in all of this genus, and of some of these there are many varieties, but none have produced, under cultivation, forms giving so great a variety of character of bush and color of flower as the common lilac, *Syringa vulgaris*, and it is one of the most beautiful of these forms known as Chas. X., which will first claim our attention Fig. 855 is from a photograph taken in June, 1894,

FIG. 856.—VARIEGATED WEIGELIA.

of a specimen about 4 feet high on one of the lawns. This variety is rather dwarf in habit and slow in growth, probably because there is a great tax annually on its powers in the profuse production of bloom with which it is covered. No other lilac in the large collection now brought together on the experimental farms blooms so profusely as Chas. X., and the bush is perfectly hardy. The flowers are of a deep purplish lilac, fragrant and borne on large trusses.

2. WOODY CARAGANA. *Caragana frutescens.*—This is one of a family of most useful and desirable shrubs, the most familiar member of which is the Siberian pea tree, *Caragana arborescens*, which is referred to under ornamental hedges. *Caragana frutescens* is also a native of Siberia, but is a less rapid grower and rarely grows higher than 3 to 4 feet, while the Siberian pea

tree attains, under favorable conditions, in a few years a height of 10 to 12 feet or more. *C. frutescens* also produces flowers more abundantly and the individual flowers are larger. It is a most attractive object when in bloom, as the whole bush is thickly covered with bright yellow pea-shaped flowers. The flowers open early in the season and are succeeded by small green seed-pods which, when approaching ripeness, change to a dull reddish color, and, when fully ripe, they burst and the seeds are scattered. This desirable shrub is easily raised from seed, which may be sown in the autumn as soon as fully ripe, o early in the spring.

3. LARGE FLOWERED VARIEGATED WEIGELIA. *Diervilla grandiflora variegata.*—The cultivated weigelias which are now referred by botanists to the

FIG. 857.—VAN HOUTTE'S SPIRÆA.

genus *Diervilla*, are among the most beautiful flowering shrubs in cultivation. The large flowered weigelia is a native of Japan—a country which has given us in recent times many beautiful shrubs and flowers. The foliage on the ordinary form of this shrub is green, but in the variegated form, to which reference is here specially made, the leaves are beautifully margined with white, which makes it a most attractive object on the lawn at all seasons of the year. When in bloom the flowers are so profuse that much of the foliage is hidden. The flowers are white shaded with rose and are funnel shaped at the base, they are produced in axillary and terminal clusters. Fig. 856 shows one of these shrubs in bloom, a specimen in the arboretum of the Experimental Farm. Most of

the weigelias are tender in this climate, and the branches are killed back every winter, half way or more to the ground. This winter-killing may be partially prevented by protecting these shrubs during the winter with a wrapping of straw or evergreen branches. The variegated form has been hardier with us than any of the others, and has never been protected. From the figure it will be seen that this bush flowered well in 1894, nearly to the tips. It is easily propagated from cuttings.

4. VAN HOUTTE'S SPIRÆA. *Spiræa Houttei.*—This charming spiræa is a fitting companion to the weigelia just referred to, on account of the abundance of bloom which it produces. The spiræas form a very large group of interesting and attractive shrubs, representatives of which are found native in almost every part of the world. None, however, are more beautiful when in flower than Van Houtte, which is then literally a sheet of pure white bloom. This bush has already been referred to under ornamental hedges, but it is more useful when grown as an individual shrub. Fig. 857 represents a specimen in full bloom on one of the lawns on the Experimental Farm. This bush is about 4 feet high and a little more than 4 feet across. It has a graceful and partly pendulous

FIG. 858.—RED TARTARIAN HONEYSUCKLE.

habit; as a rule it is hardy here, but in severe winters the branches are sometimes injured at the tips. It is quite hardy in Western Ontario; the usual method of propagation is from cuttings.

5. THUNBERG'S BARBERRY. *Berberis Thunbergii.*—This beautiful barberry, which has already been referred to in the chapter on hedges as one of the most charming shrubs for that purpose, is even more attractive when grown as a single specimen. Then it has an opportunity of displaying its beauty of form, which is neat and graceful. The flowers are produced early in the season, but they are not conspicuous and are partly hidden under the branches. Later, the scarlet berries are quite ornamental and the brilliant scarlet color assumed by the leaves of this bush towards the close of the season makes it then a most conspicuous and attractive object.

6. RED TARTARIAN HONEYSUCKLE. *Lonicera tartarica.*—This is a very hardy and useful shrub, a native of Tartary, which has long been a favorite among lovers of shrubs and trees. The flowers open early in the spring. They are rose-colored and so abundant as to partly hide the foliage. Fig. 858 shows

FIG. 859.—GUELDER ROSE OR SNOWBALL.

one of these shrubs in bloom, a specimen in one of the flower borders on the farm. They remain in flower for two or three weeks, and after the flowers are gone they are succeeded by dark colored berries which are quite ornamental. In growth the bush has a rounded form and graceful habit. There are a number of species in this group, brought from different parts of the world, some of which have yellow flowers, others white, red or variegated. A group of the different species and varieties planted together, such as may be seen in the arboretum at the Experimental Farm, is most charming in the pleasing contrasts of flower and foliage which they display.

7. GOLDEN LEAVED SPIRÆA.—*Spiræa opulifolia aurea.*—This attractive spiræa has also been referred to under hedges as one of the most desirable shrubs for this purpose. It is equally useful on the lawn and in the

FIG. 860.—WHITE JAPAN ROSE.

shrubbery ; although not specially attractive in flower its clusters of seed vessels are pretty, and its golden foliage contrasts so beautifully with the deep green of a well-kept lawn or the varying tints of green and purple in the shrubbery that it has become quite a favorite. The golden leaved spiræa is a strong grower, soon attaining a height of 5 or 6 feet, is more or less rounded in form and rather stiff in habit ; the foliage also is larger than that of most of the spiræas. It is very hardy and may be easily grown from cuttings.

8. GUELDER ROSE OR SNOWBALL. *Viburnum opulus sterilis.*—This is an old favorite in gardens, too well known to need much description. It forms a very handsome shrub with large foliage, and is a sterile form of the high bush cranberry, *Viburnum opulus*, in which all the flowers are sterile and fully devel-

oped, forming large nearly globular clusters, of a pure white color, which remain on the bush a considerable time before fading. Fig. 859 represents a bush in one of the groups on the Experimental Farm. This specimen may be propagated by layering or by cuttings of the half ripened shoots made during the summer and inserted in sandy soil in a somewhat shady position.

9. THE PLIANT VIBURNUM. *Viburnum lantana.*—There are several handsome species among the Viburnums besides the snowball, and one especially, the pliant viburnum, which commends itself for several reasons. This bush has already been spoken of favorably under hedges. Grown as an individual specimen it makes a fine shapely bush, erect in habit with beautiful foliage,

FIG. 861.—LARGE FLOWERED HYDRANGEA.

and produces large flat cymes of white flowers early in the season, which are succeeded by clusters of berries which at first are bright red, and when ripe nearly black. It is very hardy, and may be propagated by layers or cuttings as directed for the snowball, or it may be grown from seed.

10. WHITE JAPAN ROSE. *Rosa rugosa alba.*—The red flowering form of Rosa rugosa has already been referred to when treating of hedges. This is the same species with white flowers. It is a vigorous grower and makes a shapely rounded bush about 4 feet high, as seen in Fig. 860, which represents a specimen in the aboretum at the Experimental Farm. Both the red and white varieties bloom freely, and remain in flower for a considerable period, and both may be propagated by suckers which are freely produced when the bushes are well established.

11. LARGE FLOWERED MOCK ORANGE (*Philadelphus grandiflora.*) Our collection would be very incomplete without an example of the Mock Orange or syringa. There are several species belonging to this genus, which are very beautiful and interesting, especially when in bloom. Grandiflora is one of the best of them. The flowers are large, pure white, and sweet scented, and are produced in great abundance during the month of June. The bush is a vigorous grower; and if not interfered with will, under favorable conditions, eventually reach a height of 8 or 10 feet. Since the flowers are produced only on the wood of the previous year, this may be cut away when the flowering period is over, which will give more room to the new shoots, and they will become better ripened. In this way these shrubs may be kept smaller and made to produce flowers in greater profusion. The syringas will, however, do very well without any pruning beyond the occasional removal of dead wood, and flower freely. The large flowered species is fairly hardy and usually comes through the winter without much injury, especially where partially protected by other trees and shrubs, but in seasons of unusual severity the shoots are often partly winter killed.

12. LARGE FLOWERED HYDRANGEA. *Hydrangea paniculata grandiflora.* Although placed last, because it is later in flowering, the merits of this hydrangea would fairly entitle it to be put among the first and best of flowering shrubs. It was introduced from Japan in 1874, and during the twenty years which have elapsed, it has become one of the most widely diffused and favorite shrubs in cultivation. It succeeds well under many different climatic conditions, and will grow in almost any soil which is fairly rich, provided it be well supplied with water. Fig. 861represents a specimen in one of the flower borders at the farm, and shows the profuse flowering habits of this shrub. The clusters of bloom are very large, sometimes nearly a foot long and 8 to 10 inches wide, and are borne at the ends of the branches. After fully expanding, the flowers, which are white, remain in good condition for about a fortnight, after which they begin to assume a pinkish hue and gradually become soiled with dust and by insects, and eventually wither. During the early autumn when this bush is in the height of its glory, there are few other shrubs in bloom. This gives the greater prominence to this showy and valuable shrub, which would however hold its place well in any company. This hydrangea is quite hardy in the Ottawa district, and may be propagated by cuttings made from the partly ripened wood during the summer months.—Report Experimental Farms of Canada.

Bulbs expected to do service a second time must be kept growing as long as possible. The blossoms may be cut, but the foliage must not be injured; when it turns yellow, withhold water. The bulbs may remain in the soil until wanted. If plump and promising, they may do some service indoors, but if shrivelled or small, throw them away or plant in the open ground.

IDENTIFICATION OF VARIETIES OF HARDY ORCHARD FRUITS.

THE PEAR. *Form.*—May be described as for the apple, except that many kinds are pyriform, instead of "conical," and turbinate or top-shaped is very common. Some, like Kieffer, which taper towards both ends, may be called biconical. The definitions of the stem end may be simply pointed like Tyson, depressed as the Angouleme, or with the stem deeply sunken, when it resembles the "cavity" of the apple. Most of the Asiatic pears are thus formed.

The core differs from that of the apple in being sometimes hard and gritty.

Color.—As to this, there is an almost entire absence of striping with plain colors, exceptions being found in some kinds, especially when grown well to the North.

The stem has a tendency to be set at an angle to the axis of the fruit, being then termed inclined. The flesh is apt to be buttery, melting, and often granular.

THE QUINCE varies but slightly in form. Some have a plainly defined neck. Some are more angular than others, but all are slightly so. In size they vary quite decidedly. The season of ripening gives little clue to the name.

THE PEACH is a fruit of plainly separated strains or races. We all know the distinctive type called Indian, with its peculiarly brownish and striped fruit and dark colored twigs. The Spanish and Chinese strains, now coming into successful culture in the South, where our common varieties of the Persian stock fail, have their own pecularities of tree and fruit. All kinds easily divided into cling, semi-clings, and freestones.

In form they are either round, oblong, pointed, like Heath Cling, or unequal. A crease or suture running parallel to the edge of the stone is found in greater or less degree in all specimens, and is worthy so far as it differs in varieties

In color the peach is much more constant than the apple. It is greenish, cream-colored white, yellow, red, or blushed, mottled, specked and striped with carmine, in all possible tints and shades. The color of the flesh corresponds quite well with the ground color of the skin. In texture it is firm and inclined to be tough, or like Louise. Some kinds are very dry and mealy, and others dripping with juices.

Another reliable mark is the color of the flesh at the stone. The variety called Snow has no tint of red even there. But a great many kinds are red or pink, with either white or yellow flesh.

The stone itself is plump and short (in Peento about the shape and size of a very round hazelnut), or long and pointed, and very coarsely corrugated and

apt to be split. The seed of Morris White appears as if it had been mashed at the base between the thumb and finger while soft. All of the Indian class have the point turned to one side or hooked.

The downy covering of the skin differs in length and quantity and when entirely wanting the varieties are called Nectarines. In my experience I have grown Nectarines from peach seeds.

THE PLUM is represented in our orchards by at least five distinct species. The form in all is the best key to identity. Nearly all have a suture, and in some cases it is very marked.

All are characterized by a smooth surface, covered with a bloom, which varies in thickness, except Prunus Simoni, of probable Asiatic origin, and P. Glandulosa, which two species are somewhat pubescent, like the Apricot.

The flesh of all kinds is yellow or green of different shades, except a few Japanese varieties that are red to the stone.

The character of being cling or freestone is as dependable as in the peach. The length of the stem is with the plum quite constant. Some have very long and others very short stems. The character of its attachment to the fruit is variable.

The color of the skin is from pale whitish-yellow to yellow, green, pink, red, purple, blue and black. Our native species have all of the red and yellow colors, but none of the green, blue, or black so far as I have seen.

The varieties of P. chicasa seem to have a habit of being earlier in their season of ripening than P. Americana. Wild Goose is a good example of the former, and Miner of the latter. Kelsey's Japan is remarkable in size and shape of the fruit, being as tender as the fig, and its leaves and branches differ from other cultivated kinds.

THE CHERRY.—Downing divides them into two classes, the first of Hearts and Bigarreaus, and the second, the Dukes and Morellos. The former is characterized by a heart shape, a mild or sweet flavor, and rather firm flesh. The color of the Bigarreaus is usually quite fair. The latter class has an oblate form, is never pointed, and the flavor is from a pleasant tart to a sharp sour.

The cherry usually has a suture, but sometimes a welt in place of it.

The color of the skin is from white to black or nearly so. Nothing short of extended experience will enable one to determine the exact color which belongs to a variety. Even then, no one can distinguish all. The flesh in point of color is very nearly like that of the skin. The shape of the seed corresponds with the shape of the fruit in a great measure. The length of the stem does not vary greatly. The depression at the base of the stem is not plainly contrasted.

THE APRICOT reproduces from seed with comparatively little variation. Their general contour is round, with an occasional elongated or compressed form. A well marked suture is peculiar to some kinds, and other have none. The pubesence is universal and never thick.

The shape of the stone is a very good point of recognition, as some are nearly round and others broad and flat. The taste of the kernel is a reliable index, as some are bitter, and some as sweet as an almond.

The color is yellow, orange, or a rich cream, with an over-color of red, which sometimes darkens into brown. Many varieties are delicately marked with crimson and purple dots, and small specks.

The flesh is usually melting, and colored a little deeper orange or yellow than the skin. It is almost free from any inclination to cling, and not red at the stone like the peach.

The bearing quality of the tree is, through a series of years, a help in making out its varieties, and so is the style of the tree and twigs, and the color of the bark. What is known as the quality of a fruit is gauged largely by the taste of the eater; but it ought, however, to give some idea of the variety. The peculiar flavor of Westfield, or an Esopus, is apt to be remembered.—MR. VAN DEMAN, in Popular Gardening.

THE JAPANESE CHESTNUT.

The Japanese Sweet Chestnut is a decided acquisition to our nuts. The nuts are as large or larger than the Spanish and the tree far more hardy. Spanish chestnuts are barely hardy in Pennsylvania. Seedlings are often partly winter-killed for several winters in succession, but not after they gain a height of 5 or 6 feet and become sturdy. The Japanese chestnut is perfectly hardy and seldom injured. The tree, instead of being a large spreading one as are ordinary chestnuts, is a small tree. Add to this that it bears fruit when but 5 or 6 years old and but 5 to 7 feet high, and there can be no doubt of its great value. While its very large nuts will insure it a ready sale in market, it resembles the Spanish in this, that in quality it is not the equal of our own native species. The nuts are large, of light mahogany color, and, when fresh, with distinct, narrow dark brown stripes passing from base to point. Nut culture in the United States offers much encouragement, as the demand calls for enormous importations, the population is rapidly increasing, while but few plantings of nut trees are believed to be made; their culture is of the easiest kind and returns certain when a nut grove is once well established.—Farm and Home.

FIG. 862.—A PROMISING AND IMPROVED CHESTNUT.

SHIPPING PRODUCE IN COLD WEATHER.

SHIPMENTS of such perishable farm produce as apples, potatoes, etc., during the winter season are always fraught with danger of freezing while in transit. The cold snap during the middle of November resulted in considerable loss to shippers who were caught in just this way. Potatoes forwarded in unprotected cars were at times so badly frostbitten that receivers could get but 25c. to 35c. per bush. for stock which ought to have been worth nearly twice that much. The weather bureau of the United States Department of Agriculture has prepared some interesting figures regarding the temperature in degrees which various articles of farm produce can stand without injury when unprotected. Tabulated, the figures given in degrees above zero are as follows:

Apples, in bbls.	20	Flowers	35
Apples, loose	28	Grapes	34
Apricots, in bskts	35	Lemons, boxed	36
Bananas	45	Mandarins	32
Cabbage, in Crates	30	Oranges, boxed	25
Celery	30	Onions, boxed	20
Cider	22	Pineapples	35
Cranberries	28	Potatoes, Irish, bbls	33
Eggs, in bbls. or cra	30	Potatoes, sweet	36

In the transportation of fruits and vegetables there are three primary objects to be obtained. First, the protection of shipments against frost or excessive cold. Second, the protection of the same against excessive heat, and finally the circulation of air through the car so as to carry off the gases generated by this class of fruit. In shipping goods, injury is liable to occur from long exposure to a temperature but little below 32°, or from a shorter exposure to a greater cold so that the duration as well as the intensity of the cold must be considered. The temperature of the produce when put into the car is quite a feature to be observed. If it has been exposed to a low temperature for a considerable time before, it is in a poor condition to withstand the cold, and the length of time so exposed should be taken into account.

As a rule, perishable stuff can be shipped with safety in ordinary freight cars when the outside temperature is 20° above zero. In refrigerator cars safety may be assumed when the outside temperature is 10° above zero. In the latter, the goods may be safely shipped with a temperature outside of from zero to 10° below if the car is first heated and at the end of the journey the goods are taken immediately into a warm place. In winter time refrigerator cars are used without ice in forwarding goods from the Pacific Coast. In passing through cold belts or stretches of country the hatches are closed and the car, being lined, with padded doors, affords protection against the outside temperature. In passing through warm climates the hatches are opened in order to prevent perishable goods from heating and decaying.

Ordinary freight cars when lined with tongued and grooved boards on the sides and ends, leaving an air space of about four inches, are considered the best by big shippers of potatoes, as they can be heated by an ordinary stove and will stand an outside temperature of about 20° below zero when a man is in charge to keep up the fires.—Farm and Home.

RAISING MUSK MELONS.

AT the Henry Shaw banquet to nurserymen, florists and market gardeners, given in St. Louis on the 14th of September, Mr. D. I. Bushnell, in speaking of the celebrated Montreal musk melons, said :

"Great care is used in the selection of seed. The melon earliest to ripen, best shape, etc., is left to ripen thoroughly for this purpose. The hotbed is made by first spreading hot manure fifteen inches deep upon the ground, then laying the frame thereon, banking outside with manure and filling the inside of frame with five inches of dirt. The glass is then put and left for a few days in this state until the first great heat is over. The seeds are planted about April 1, in five-inch pots, five seeds in each, and pots placed in hotbed frame as close together as possible. The temperature of the hotbed is kept at about 80°.

"Early in May trenches are dug, fifteen inches deep, filled with hot manure, covered with earth eight to ten inches, and at a distance of every four feet the melons are transplanted, putting one pot containing three or four stout plants in each hill, of course turning them out of the pots. They are again covered with glass and given plenty of air during the day and covered at night.

"When the plants make a growth of three leaves, nip off the top so they can send out shoots for fruit. This is of great importance. About July 1, when vines have grown enough to fill the frames and melons are formed the size of your fist, remove the frames gradually. Shingles are placed under the melons, which greatly add to the appearance of the fruit when ripe. The largest melon I ever saw weighed twenty-eight pounds, although thirty-five to thirty-eight pounds is not at all unusual."—Gardening.

"I LOVE all that is beautiful in Nature and art," she was saying to her æsthetic admirer. "I revel in the green fields, the babbling brooks and the little wayside flowers. I feast on the beauties of earth and sky and air. They are my daily life and food, and—" "Maudie," cried out her mother from the kitchen, not knowing that her daughter's beau was in the parlor. "Maudie, whatever made you go and eat that big dish of cabbage and pork that was left over from dinner? I told you we wanted them warmed up for supper I declare if your appetite isn't enough to bankrupt your pa." And she collapsed. —New Orleans Picayune.

INEXPENSIVE GREENHOUSE.

THE accompanying illustration shows the plan for a greenhouse which is cheap and gives a different temperature in various parts of the house, yet is heated with only one fire. The front part is ten feet wide and twenty-two feet long and the rear part eight feet wide and twenty-two feet long. To build the house, dig in the ground two and a half feet, then set in oak posts eight feet long, sinking them three feet in the ground. This leaves the walls five feet high, except the south wall, which is only four feet high. This wall being low lets in plenty of sunshine. The framework is oak scantling two by three inches, and the walls are made of oak boards one inch thick. Then earth is banked up to the top of the wall and sodded. The rafters on the south side are seven feet long; all the other rafters are four and a half feet long. The letter *a* indicates the position of the stove, which is an old fashioned wood-heating stove. The legs are left off and it is set on bricks so as to place it low down, and over it is built the cutting bench, the bottom of the bench being two feet from the top of the stove. A large pot of water is kept on the oven to maintain due moisture in the air. A large piece of sheet iron is placed between the stove and the wall; another piece is arranged so as to be easily moved in and out between the top of the stove and the bottom of the cutting bench. The dotted lines show where the flue passes from the stove. The flue is made of six-inch tile, except one joint of stovepipe next the stove. This tile is supported by strong galvanized wire fastened to the wall at one end, and to the rail on the flower bench on the other end. The joints of tile are luted together with wet clay, which makes it easy to take them down for cleaning out the soot, which must be done about once a month in winter. The bench indicated by *b* and *c* is built high enough to allow two and one-half feet space under it, which gives room to get under to put wood in the stove; *b* is a bed of heliotrope which is always in bloom, and *c* is where the carnations are grown for winter blooming. The fire is allowed to burn its full force only in zero weather, when it must be looked after every four hours. In moderately cold weather it may be left all night. There is always a difference of ten to twelve degrees between the middle and the ends of the greenhouse. At *d* is the rose bench, where roses are grown for cut flowers, a Marechal Neil being in the end nearest the fire. The bench is two feet high. At *e* is the place for begonias and young palms; *f*, smilax, the bench low down; *g*, coleus, begonias, etc.; *h*, a large palm; *i*, a tall plant. All the benches *k*, *l* and *m*, are used for

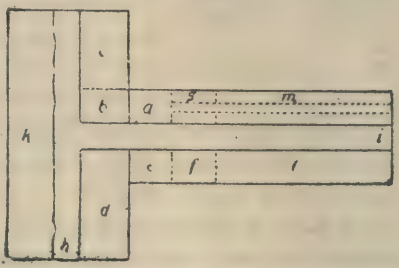

FIG. 863—GROUND PLAN OF GREENHOUSE.

plants for sale. The walks are two feet wide. The door is in the west end, and a storm door is built outside. I did all my work myself and the greenhouse cost me fifty dollars. With a few cold frames in addition it will, if well managed, turn out $200 to $300 worth of plants and cut flowers per year. Still, if the purse will admit, build it on the level ground and do not dig. Use two thicknesses of board and put tarred paper between them, as the building will then last much longer, will not be so damp in continued wet weather, and will allow cold frames to be placed outside the east wall. A good drain is indispensable for a house built below the level of the ground.—Ex.

Bank Forcing House.—The accompanying illustration shows a plan for securing a maximum of warmth at the least possible expenditure of internal heat. Such a house is, moreover, cheaply built wherever loose stones are abundant, whether the stones be irregularly faced, or simply rounded cobble-stones. A cut is made into the bank and the wall laid up in cement, or cement and lime. The rear and end walls should have a tile drain laid just outside of their base, coming out upon the surface at the front. The rear wall should rise a little above the ground, which should be graded a trifle higher in the middle at the rear than at the ends, to turn aside the surface water. The tile drain will take care of all water that soaks down through the ground. The wall in front is extended a little beyond either end of the building to retain a full bank of earth against the end walls. The interior arrangement will, of course, be similar to any single roofed forcing house.

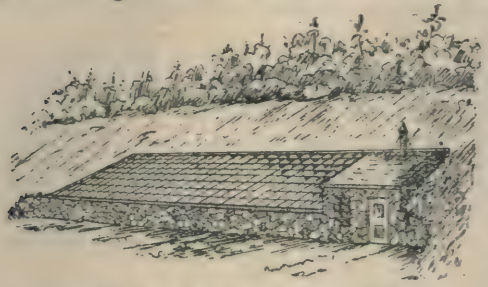

FIG. 864—BANK FORCING HOUSE.

Apple Culture requires more care than any other crop. A few years ago I plowed my apple orchard three years in succession, gave it a heavy dressing of stable manure, and raised corn the first year, potatoes the second, and seeded down with barley the third season, and got the heaviest crops of apples ever grown on this farm. Some say that this method over-stimulates the trees. What if it does? A double crop of large smooth fruit for ten years ought to satisfy us as well as an average crop for 20 years. I believe if every farmer will follow this experience and spray his trees thoroughly he would agree with me that, take it one year and another, the apple is one of the most profitable crops on many farms. Painting the trunk with lime, soap and water will destroy many insects that do irreparable injury to the fruit trees.—American Agriculturist.

BLACKBERRY CULTURE.

OF late years the cultivation of the blackberry has become a leading branch of fruit growing. Throughout the United States hundreds of acres of sandy soil have been devoted to its profitable culture.

Culture.—A moderately rich, sandy soil, warm and moist, is best adapted to the growth of the blackberry. The situation should be as high as possible, as on the low land there is more danger from frost. For garden culture set the plants four feet apart each way, and six feet apart for field culture. Healthy young plants from root cuttings are the best. When the young canes are three feet high they should be pinched in, to encourage the growth of side shoots. Any suckers found between the plants should be cut off as soon as they appear.

Varieties.—Wilson's Early, Kittatinny, Lawton and Snyder are among the best varieties. The Wilson is very early and large, and has a fine glossy appearance that shows to advantage in the market. The Kittatinny is a good berry for the family, and though not as firm as the Wilson, is perfectly ripe and sweet as soon as it is black, which is not the case with the other varieties. The Lawton is an old and very productive variety. Though rather late for the market, it is valuable as it remains bearing for a long time. The Snyder is a very productive and hardy variety. The berries are not large but juicy.

In order to protect blackberry canes during the winter, they should be bent over and covered with earth, first putting a little earth at the base of the canes, where they are bent over. This will prevent them from breaking. The canes should be pruned before being laid down, and uncovered in early spring.

Tiverton, Ont. A. H. CAMERON.

Fertilizers for Grapes.—Some years ago I found that Delawares do best on clay, or heavy clay loam. Later on I found that a fertilizer containing potash induced a more rapid and vigorous growth. Now I use about 600 lbs. per acre of a fertilizer containing eight per cent. phosphoric acid and 10 per cent. potash. Every few years I apply from 15 to 20 bushels of water-slaked lime per acre. The result is, my Delawares have paid ten times over the amount expended for material. The Concord grape does well on clay loam, while the Catawba thrives best in loose, gravelly, porous soils, with exposure to air and sunshine. That is why the Catawba reaches such excellence in the Lake Keuka region, and, as the soil is thin and poor, growers there find stable manure necessary for the growth of wood. There is another point. All grapes succeed best on lands well cultivated and thoroughly drained. As every grower knows that grapes do not like "wet feet," they should be planted on lands where the heat and air could go to the roots.—L. J. V., Chautauqua Co., N. Y.

GROWING TOMATOES FOR THE ENGLISH MARKET.

IN view of the failure of the cold storage apartments, our first venture in shipping tomatoes and other fruits to England gives us no data for concluding as to the advisability of making further consignments next season. We believe that there is something in it for us yet, providing the steamship companies provide satisfactory accommodation. No doubt the Dominion will take this matter up in earnest next year in the interest of the growers.

The following item written for the Montreal Trade Bulletin, by an English correspondent, will be of general interest :—

With regard to Canada shipping tomatoes, I have not seen the fruit, and do not know of what variety the shipments have consisted ; but they will have to be of very fine quality to meet the competition. Just about from now on, some very fine fruit from the Dominion might do fairly well, if our prices agree with shippers' ideas, as supplies are falling off from all quarters. But if they are to come during the summer they would have to be bought for next to nothing on spot to pay. Our market is now higher than it has been for some time, and only yesterday Lisbon tomatoes sold in half boxes as low as 1s. 6d., while the highest range was up to 6s. 6d for exceptionally fine quality. They can be bought in the shops for from 2d. to 3d. a pound, while during the summer they have sold at from 1d. to 2d. The last tomatoes are those grown from English seed, and these are largely imported from Spain, which has taken to buying seed here and growing immense quantities vendable in the flush of the season as low as 2d. retail, and really fine fruit. The Channel Islands go in big for this business, and Jersey sends us literally thousands of tons annually, while France, Spain and Portugal are powerful competitors of the army of people who have arisen in this country to produce the fruit under glass. The supply has created the demand and the public having been educated to eat tomatoes, do so abundantly. But they have also learned to be moderate in their ideas of value. If Canadians can grow good tomatoes *à l'anglaise* to sell in our season, retail, at a slightly higher figure, all well ; if not, they must keep out of it.

Origin of the Ben Davis.—The Ben Davis apple was brought originally from North Carolina along with a lot of other seedling apples. The Davis family moved to Kentucky and set the original Davis orchard in Butler county. The Hill family moved to Illinois and took along some grafts from the Kentucky orchard. The apple proving valuable, the question naturally came up as to what the apple should be named, and the answer came, "Ben Davis, for it was Ben Davis who brought the seedling sprout from North Carolina." This apple is no doubt planted over a wider section of the country than is any other variety. A part of the original orchard is still in bearing conditions.—Free Press, Farm and Garden.

TOMATOES AS A WINTER CROP.

The winter forcing of tomatoes is one of the most interesting, satisfactory and often most profitable operations of the gardener. The most important conditions are a warm, light house—a two-thirds span, facing south, being preferable—strong bottom heat, rich soil, careful training, uniform temperature, care in watering and pollinating, constant watchfulness and good judgment. We plan for two crops each season. The first is started by July 1 to 15. Place them on the fruiting benches in September, and the crop is in its prime at the holiday season, but lasts into February. The second crop, started in October, takes the place of the other in February. On the fruiting benches, four plants are grown in a box 18 in. square and 1 ft. deep. Each plant is trained to a single stem, and occupies 1½ sq. ft. of floor space. Strong flax cord—the size of wool twine—extends from the base of each plant to the roof. The plant is secured to it by raffia bands. From much study I am convinced that failure to fruit well is often due to insufficiency of pollen on the stigma. The only attention we have found necessary to remedy this is, on bright days, when the atmosphere is relatively dry, to give to each plant two or three sharp taps with a padded stick. The most satisfactory varieties for forcing are Lorillard, Ithaca, Chemin Market, Optimus and Golden Queen. The average crop with us has been about 1 7/10 lbs. per sq. ft. of floor space, which at 50c. pays well.—PROF. W. W. MUNSON to Massachusetts Horticultural Society.

Fertilizers for Various Fruits.—Professor Fields, of the Pennsylvania Experiment Station, is reported to give the amount of various ingredients removed from the soil by certain fruit crops as follows: "An acre of apples producing 360 bushels removes from the soil 24 pounds of nitrogen, 2 pounds of phosphoric acid and 34 pounds of potash, all valued at $5.74. An acre of pears yielding 335 bushels removes 16 pounds nitrogen, 5 pounds phosphoric acid and 14 pounds of potash, total value $3.60. Grapes harvesting 8,160 pounds per acre contain 13 pounds nitrogen, 4 pounds of phosphoric acid, 22 pounds potash, worth $3.61. Peaches yielding 335 bushels per acre remove 3 pounds of phosphoric acid and 10 pounds of potash.

The amount of nitrogen required by the above yield of peaches was not given.

Flowering Shrubs in Winter.—One of the most charming flower displays in winter is secured by boxing a few of our prettier but common shrubs, such as lilacs, deutzias, syringas and spireas. Small lilacs should be grown stocky in our gardens for this special service. Dig them in the fall and place in the cellar for a few weeks. Remove to a warm room about two weeks before flowers are needed. In this way you may have a succession of lilacs all winter. The fragrance fills the house. A very easy shrub to force is the yellow flowering current. This is also very fragrant, No special care is needed in forcing shrubs except to keep them watered.—Amer. Agriculturist.

The Garden and Lawn.

STANDS FOR PLANTS.

DURING the cold winter months, when many housewives are compelled to stay indoors so much of the time, they find their greatest happiness in caring for plants, and many have wished for years for a plant stand. Cannot the husband or son use two or three hours some stormy day in making one? There are a varlety of models to choose from. An old pattern, and probably the best because it will hold the most, is the half circular one with three shelves (Fig. 865). It is made with three legs and two short braces between them under the lowest broadest shelf. The rear view is shown in the illustration, as its construction can be seen there at a glance, and this is the view exposed to the living room also, the shelves being turned to the window. The shelves should be made broad enough to extend beyond the frame at least two inches.

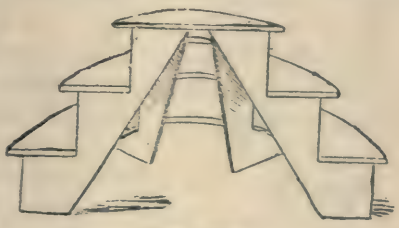

FIG. 865.

A small, strong bench to hold a large window box (Fig. 866) is quickly made as follows: Measure the depth of the box it is to hold and make the legs long enough to raise it to a level with the window sill. They are composed of boards notched at the bottom. A top board is nailed or screwed in place and a shelf firmly nailed to cleats half way between top and floor. This shelf is useful for a variety of purposes as well as a brace to strengthen the bench. Another pretty stand is a rack added to the top of a bench (Fig. 867). It is faced to the window and rests upon the sill. It will hold a large number of pots on its two shelves and on the bench.

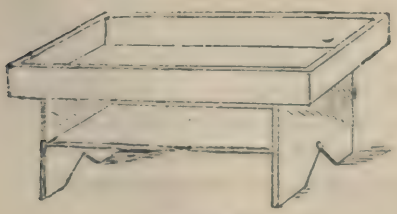

FIG. 866.

An arrangement which seems to be the most perfect in every respect, because of its allowing the plants all the sunshine,

and being kept out of the way when the room is swept, is a plant rack made of hanging shelves (Fig. 868). The top shelf is eighteen inches to two feet from the glass, while the bottom shelf is on a level with the window sill. The weight of the rack and plants is supported entirely by the window frame, to which it is screwed at the bottom, and held by a strong wire at the top. It is easily taken down and put aside in the spring. A neat finish to all of these plant racks is dark green paint. Nothing is so pretty and appropriate for the green foliage and bright flowers.—Orange Judd Farmer.

FIG. 867.

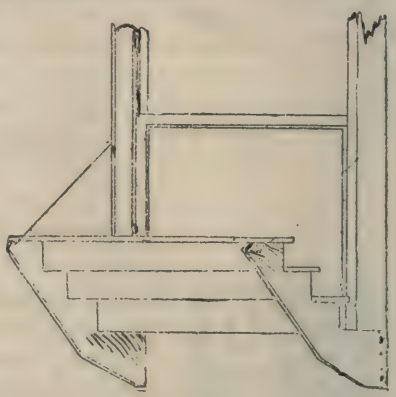

FIG. 868.

A HANDY PLANT STAND.

FIG. 869.—STAND FOR PLANTS IN POTS.

The accompanying sketch represents a stand of my own designing and make which has been found to be most useful, either indoors or outside. You will see that it is well adapted to give the plants all the room and sunlight needed; it occupies little floor space and makes it convenient to get at any particular plant. The form fits it for use in any part of the house for special decoration, and when it is filled with healthy plants is a very ornamental piece. The upright pole is 6 feet in height, is of 3-inch cherrywood, with a base about 20 inches in diameter; which may be mounted on castors—I use eight, but six would do; the brackets are ordinary ones, such as are kept at the hardware stores; the top piece being the shelf from a large one, and I use it for a large shallow jar of trailing vines or a palm. I have thought the stand a very good thing and found it for the last two winters almost indispensable in our small dining room.—C. F. BARBER, St. Paul, Minn., in American Garden.

HARDY PLANTS IN THE WINDOW.

MR. JOSIAH HOOPES gives some excellent points in a recent article in the Weekly Tribune on hardy growths for window culture: Thrifty young shrubs, two or three years old, chosen from among early-bloomers, form as attractive window ornaments as any kind of plants we can select. They are cheap, and adapted to the atmosphere of our living rooms, growing and blooming in pots with the freedom of shrubs in the open ground. Early-blooming hardy herbaceous plants are equally desirable for the purpose, and require even less care. The multitude of enfeebled roses, geraniums, etc., in the winter windows of so many flower-loving people should be replaced by more easily-grown plants, and we would then hear far less complaint of "poor luck with flowers." In selecting shrubs for this purpose, earliness is of greatest importance; next comes freedom of bloom; then adaptability to pot-culture; and lastly, dwarf compact habit. No plant should be rejected for not conforming to the last requisition, as any shrub can be made denser by systematic pruning, once or twice a year. Young and thrifty shrubs are preferable to those with old, hardened wood, and will produce more bloom as well as prove more sightly in pots. Although most early-blooming shrubs will answer the purpose, the following seem to fill the bill with entire satisfaction, provided the plants have been previously pruned into proper shape; Deutzia gracilis, the perfection of a house plant, and fine for cut-flowers, as are all the family. The weigelas in variety, especially "Candida," with pure white flowers, and any of the deep-red colored varieties. Forsythia fortuni, with golden yellow bloom, and an improved habit, with very dark green foliage. Philade'phus coronarius, or the "Mock-orange," is beautiful, and possesses a delightful fragrance. The double rose, and double white almonds, are among the best plants for the purpose, blooming both early and profusely. The Missouri currant, with its rich, spicy fragrance and bright yellow flowers, is excellent. Spiræa prunifolia, S. Reevesi (both single and double), S. Thunbergi S. Trilobata, etc., are all valuable. And lastly, the syringas or lilacs are all beautiful, although not so readily grown by amateurs as same of the foregoing. Among herbaceous plants, such easily forced species as Astilbe japonica, Dicentra spectabilis, lily of the valley, violets, etc., may be depended upon for a supply of flowers during winter. To obtain best results, the plants should be lifted as soon as matured in autumn, say in November, potted in good light soil, and set away in a cool shaded location, until needed for forcing. Never use pots of a larger size than is absolutely necessary, and plunging in coal ashes encourages root formation. One may readily enjoy a succession of flowers all winter long by forcing a few at a time, and replenishing as the bloom fades away. Hardy

plants of every description dislike strong heat, preferring a cool, moist atmosphere, with plenty of air in mild weather, and free access to the sun's rays. They do not require to be constantly deluged with water, but should receive a liberal supply whenever the soil becomes dry. Drainage in the pots must always be attended to, as stagnant water at the roots will result in diseased plants and impoverished flowers. For window-culture, the plants should be started either in a cool greenhouse, or sunny window in the domestic apartments, whence they may be removed to the living room as the bloom begins to appear.—Popular Gardening.

HOYA CARNOSA.

WHERE space is limited, I prefer to grow flowering plants instead of vines, ivies, etc. But a blooming vine has a combination of qualities which should be respected. Such a vine is the hoya, or "wax plant." It delights in a warm, shady situation, and a rich sandy loam. Five years ago I was given only a leaf of that coveted plant. An eight-inch pot was filed with rich sandy loam, the leaf was inserted, and about half covered with the soil; it was watered, then placed in a south window to wait developments. Yes, indeed, I waited; but, long as it seemed, it amply paid me for waiting. The first year it grew about six or eight inches, but the next two years it grew very fast, and formed buds that gave me the most beautiful flower of my collection. It bears its flowers in umbels of a pinkish white with a dark centre. They look like the purest wax, with a drop of honey in the centre of each flower; and they are also delightfully fragrant. Contrary to the advice usually given, the flowers of the hoya should not be taken off, for they bloom each year on the old flower stem; it also sends out buds each year that bloom the following season. The long trailing ends should not be cut off, for in time they put forth leaves and branches. The hoya should not be shifted or the roots disturbed if flowers are wanted; they will then bloom when three years old. I give plenty of water during the growing season, and a weak fertilizer while in bloom, but in winter water is withheld, and the plant allowed a rest. The leaves are dark green, thick and wax-like, thus both leaves and flowers suggest its common name. Kept free from dust it is a very desirable foliage plant. My hoya stands in a west window; sun-loving plants are placed between it and the window to shield it from the direct rays of the sun. It is an ornament to any plant collection, and improves with age.—Vick's Magazine.

"DON'T talk to me," said the lettuce to the turnip. "I have a heart and you haven't." "I don't see how that can be," replied the turnip. "You never get mashed, and I do."—Life.

WINTER PROTECTION OF ROSES.

Our object in covering roses during winter is principally to prevent a too rapid thawing of the frozen buds and wood; 16° to 20° of frost will not injure the H. P. roses during their winter resting period. It is the action of the sun's heat upon the frozen wood nd buds which does the injury, so that whatever method we adopt for covering our roses in winter, it should be such as will prevent severe freezing of the wood and buds, and, if frozen, to prevent rapid thawing.

During the winter, while going through the garden of a neighbor who has a few hundred roses, I noticed he had carefully wrapped or thatched each rose bush with straw. The method has a neat appearance, and certainly answers the purpose well, for his roses now (May 10) are in excellent condition. This method of winter protection, however, occupies more time than rose growers on a more extensive scale would care to give to the work, nor is it at all necessary, for equally good, or better, results are obtained by more simple methods, the work at the same time being done much more rapidly.

The method we adopt here at Widenethe is the same as practiced by Mr. Henry W. Sargent nearly half a century ago, and satisfactory results are always obtained,

PROTECTIVE METHODS.—About November 20, or before the ground is frozen, the rose growths are shortened, leaving about 18 inches of the current season's growth. Soil is then thrown up around each plant, the mound being made sufficiently high to cover at least six to eight inches of the current season's wood. Our roses being planted from 3½ to 4 feet apart, there is no difficulty in obtaining sufficient soil for this purpose.

The close pruning, too, which is practised here, facilitaties this method of winter protection. After the roses are earthed up, the rose beds are given a good mulching of half rotted cow manure; this serves the double purpose of protecting the roots, which, after the removal of so much soil, will be near the surface, and also by being dissolved by the thawed snow, supplies the necessary food in an available form for the plants to take up when they commence to grow in the early spring.

This method of wintering roses should recommend itself to all gardeners in private gardens, there being no straw or leaves to litter the lawn. It is easily and quickly done, and there is nothing to displease the eye or make the garden unsightly.

The same cannot be said for the heaps of leaves and brush one can so often see used for covering rose beds.

HYBRID PERPETUALS.—In wintering the Hybrid Perpetual roses, it is quite unnecessary to go to the trouble of pegging down the shoots and then covering with a foot of leaves. The earthing up method will be found equally satisfactory

and far more pleasant to do, for it requires a great deal of time and patience, and is anything but pleasant labor to get the leaves out of the rose bushes in the spring. Tea roses should be laid down and covered with soil in the same way that we treat raspberries. Mulch with half rotted cow manure and when the ground is frozen cover the beds with salt hay or fern, if obtainable, or leaves, covering the whole with spruce boughs or wire netting.—American Gardening.

Irrigation Has Come to Stay, because it is a success. It has already gladdened the heart and brightened the pathway of many a western farmer. It means a sure living, and a competence in the future. With the introduction of fish culture on your farm in connection with your irrigation plant, those desirable results will come quicker. It will not only add to the beautified home, surrounded by groves, orchards, vineyards and gardens, which the transcendent power and influence of water will make possible, but it will enable you to raise fish, and bring a new food to your table—a change of diet which in all ages and climes has proved beneficial to the human family. Do not delay, for delays are dangerous. Build your ponds and reservoirs, dam the draws, corral the springs and creeks. Keep the live stock away from the reservoir and keep the water fresh, and you will have a wonderful start towards bettering your condition as a progressive farmer.—JOHN H. CHURCHILL, Kansas.

"HEAR how the trees in the orchard moan," exclaimed the romantic miss. "I guess you would moan too, if you were as full of green apples," replied the matter-of fact youth. And the air grew a-chill.—Philadelphia Record.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE FLORAL EXHIBIT of the Grimsby Horticultural Society was a grand success this season. It was held in the Town Hall on the evening of September 17th, and, though a little late in the month for the best spikes of gladioli, the show of other flowers, both cut and in pots, filled every spare foot of space. The Society had distributed to each member a dozen gladoli and two tuberous begonias. The gladioli were planted about the first of June, and had the show taken place the first week of September, these would have been at the height of perfection. Even as it was, there was a fine lot of blooms of this flower. The thanks of the Society are due to Miss Little of Granton for a basket of beautiful spikes of gladioli contributed by her. With the floral exhibit was combined an art exhibit, and teachers and pupils united in the display of their work, which contributed very much to the interest of the occasion. The people of Grimsby were well represented, and the first part of the evening was a veritable conversazione, after which the president, Mr. J. H. Grout, called for a programme of music and recitations. There was an admission fee of ten cents, which left a nice little sum in the hands of the treasurer after expenses were paid.

EXPORT TRADE IN CIDER.—We are in receipt of the following letter from Mr. H. B. Small, Secretary Department of Agriculture, Ottawa, on this subject:

"*Sir*:—I am directed to enclose to you herewith copy of a publication transmitted by the High Commissioner, entitled 'Cider,' and to call your attention to the desirability of opening an export trade in that commodity between Canada and the United Kingdom.

"The High Commissioner calls attention to the fact that very large quan-

tities of cider are exported to Great Britain from the United States, and he sees no reason why Canada should not participate in the same trade."

The journal is published by L. Lumley & Co., 1 America Square, London, E.C. There is certainly an immense quantity of waste apples in our orchards which might well be utilized more generally in making cider, providing once it was proved that an export trade in it could be made profitable.

THE DOMINION GOVERNMENT has kindly undertaken to pay the freight charges on the shipment of tender fruits to Liverpool in cold storage. It is stated by Mr. Craig, in a letter just received, that at the solicitation of the Fruit Growers' Association, and his recommendation, the Acting Minister of Agriculture has agreed to ask Parliament for a vote to be applied to experimental work along the same line in 1896. No doubt this undertaking, if carefully persevered in, will result in materially advancing the interests of Canadian fruit growers.

GROUT'S SEEDLING.—Mr. John H. Grout, President of the Grimsby Horticultural Society, handed in a sample of a fine dessert apple very much resembling the Woolverton (a Princess Louise) in appearance and in flavor. It is a chance seedling, probably of Fameuse, growing along the north side of the mountain at Grimsby. For a choice dessert apple for the month of October, it

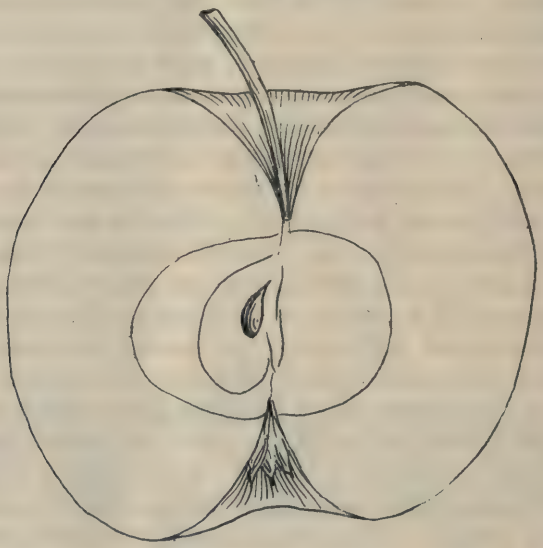

FIG. 870.—GROUT'S SEEDLING.

might be desirable. The drawing of the section will give a correct idea of its size. The color is yellowish, almost straw color, with dark pink blush in the sun. The flesh is white, tender, juicy, with mild sub-acid very agreeable, perfumed flavor.

BITTER ROT OF THE APPLE.—A large quantity of Baldwins, grown in one of our orchards at Maplehurst, were spoiled by being almost covered with small spots, which, on cutting the apple, were seen to be a dry rot, extending through almost the whole core. This has now troubled us for two or three seasons, and is becoming yearly more troublesome. On sending a sample to Professor Craig, Ottawa, he replied as follows :—

"Replying to yours of the 22nd of October, submitting sample of Baldwin apple affected with rot, I may say that I have examined the specimen in question and believe it to be affected with a form of bitter rot, *Gleosporium*. This is a disease which is quite common in some places in the South, particularly Virginia, Kentucky and Missouri. We have not been troubled with it in the North, so far as I am aware, to any extent till the present season, when I have received a number of samples from various quarters, exhibiting the presence of this disease.

"With regard to remedies, spraying with Bordeaux mixture and other fungicides has, so far as I have been able to learn, been ineffectual. Special care should be taken to collect and destroy all the diseased fruit which may remain upon the tree or rest upon the ground."

THE KENSINGTON GRAPE.—Two vines of this variery have just come to hand for testing, from Mr. John Craig, Horticulturist Central Experimental Farm, Ottawa. The following is the description which appeared in the Report of the Experimental Farms of Canada :

KENSINGTON (*Riparia hybrid*).—Produced at London, Ont., some years ago, by Mr. Wm. Saunders, who pollenized Clinton with Buckland's Sweetwater. This variety, in a remarkable way, combines in fruit and vine the characteristics of both parents. Vine fairly vigorous ; wood short-jointed ; leaves deeply cut ; bunch medium. Berry medium size, oval ; white skin, thin ; pulp rich and juicy ; a grape of first quality, ripening with or a little before Concord ; home use. Thus far it has not been propagated to any extent, but its probable value for southern localities, should lead to giving it a more thorough trial by grape-growers.

OMISSION.—The excellent report on Early Varieties of Strawberries on page 394 was sent in by Mr. E. B. Stevenson, Freeman, Ont., our special experimenter in strawberries. The next report of fruit experimental work will contain much valuable matter from his pen.

Question Drawer.

Best Varieties.

765. SIR,—Would you please give me a list of six each of the most profitable varieties of apples, pears, peaches and plums, in order of merit.

W. COATSWORTH, *Chatham.*

Your question is one which cannot be safely answered because of the varying conditions of soil and climate, and the demands of the market to which you would ship. We would refer you to the articles in this Journal concerning varieties, and also to the reports both of our Association and of the Fruit Experimental Stations.

Potash for Trees.

766. SIR,—What is the proper way of applying sulphate of iron and potash to the roots of trees?

G. R., *Toronto.*

Sulphate of iron is sprayed on the body of the trees before foliage appears, 1 pound dissolved in 15 gallons of water.

Potash is not applied in contact with the roots of trees. It should be sown upon the surface, and gradually cultivated into the ground. Ashes is a convenient form of applying potash to an orchard, using, say, 50 bushels to an acre.

Melons Mixing.

767. SIR,—Will different varieties of melons mix if planted near together?

SUBSCRIBER AT IROQUOIS.

Reply by H. L. Hutt, Horticulturist, Ontario Agricultural College, Guelph, Ont.

Yes. This will make no difference, however, unless you wish to save the seed, as the cross is not apparent the first year.

Crops Mixing.

768. SIR,—What kind of garden and field crops are in danger of mixing if sown together?

IROQUOIS.

Reply by Prof. Hutt.

The different varieties of melons, cucumbers, squashes and corn mix most readily when grown near together.

Cannas.

769. SIR,—Should Cannas be taken in every fall ?

IROQUOIS.

Reply by Prof. Hutt.

Yes.

Tulip Tree.

770. SIR,—Do you consider Tulip trees, White Fringe and Red Althæas sufficiently hardy for Dundas County ?

IROQUOIS.

Reply by Prof. Hutt.

I am inclined to think all of these would prove too tender for Dundas Co. The White Fringe *(Chionanthus Virginius)* stands the winter fairly well at Guelph, although it is reported on as tender at Ottawa.

Hydrangea.

771. SIR,—Does the Hydrangea require to be covered here for winter protection ?

IROQUOIS.

Reply by Prof. Hutt.

The Hydrangea *(Hydrangea paniculata)* is fairly hardy here and is reported the same at Ottawa. I would advise you, however, to give it winter protection until you find by experiment that it is not needed.

Our Book Table.

STANDARD DICTIONARY OF THE ENGLISH LANGUAGE, upon original plans, designed to give, in complete and accurate statement, in the light of the most recent advances in knowledge, and in the readiest form for popular use, the orthography, pronuncintion, meaning and etymology of all the words, and the meaning of the idiomatic phrases in the speech and literature of the English speaking peoples, prepared by more than two hundred specialists and other scholars. For sale by the Funk, Wagnall Co., 11 Richmond St. W., Toronto.

The fact that Prof. A. A. Crozier; so long the Secretary of the American Pomological Society, edits the pomological department of this Dictionary, is enough to commend it as of especial value to fruit men. The word APPLE alone has three columns devoted to it, giving the names and descriptions of the leading varieties.

The word Coin has nine columns, giving the names of all known coins, their national equivalent and value in dollars and cents. Our readers who wish to buy the best Dictionary, should write for circulars and carefully examine this one before purchasing.

TOMATO GROWING FOR PROFIT, being a practical treatise showing in detail how to grow tomatoes by new methods, from the saving of the seed to the marketing of the crop, so as to leave, when sold, the largest amount of profit to the producer ; the whole being the result of over thirty years' extensive practical experience by the author, S. W. Mitchell, gardener, florist and seedsman, St. Marys, Ont.

Mr. Mitchell has this work neatly printed in pamphlet form, which he offers for the very low price of 15 cents a copy.

THE EDUCATIONAL JOURNAL is edited and published by Mr. J. E. Wells, M.A., 11 Richmond St. W., Toronto. This Journal is opening a new department in the way of a Teachers' Bureau, which should prove a most successful enterprise.

Merry
Christmas.
1895

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